

Japanese Heavy Cruisers of World War II

in action



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Warships Number 26

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Don Greer

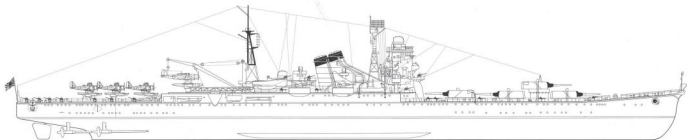
Japanese Heavy Cruisers **of World War II** **in action**

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Editor: J. Michael McMurtrey



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Cover: IJN heavy cruiser Takao fires a salvo of 20.3 cm (8-inch) shells at battleship USS South Dakota off Guadalcanal on the night 14-15 November 1942. Cruisers Takao and Atago, on a mission to bombard Henderson Field along with battleship Kirishima, were intercepted by South Dakota and USS Washington in a night action which saw Kirishima sunk and South Dakota heavily damaged.

Acknowledgements and Photo Credits:

Conway's *All The World's Fighting Ships 1922-1946*. New York: Mayflower Books, 1980.
 Francillon, R.J. *Japanese Aircraft of the Pacific War*. New York: Funk and Wagnalls, 1970.
 Jentschura, Hansgeorg, Dieter Jung and Peter Mickel. *Warships of the Imperial Japanese Navy*. Annapolis, Md.: Naval Institute Press, 1977.
 Lacroix, Eric, and Linton Wells. *Japanese Cruisers of the Pacific War*. Annapolis, Md.: Naval Institute Press, 1997.
 Skulski, Janusz. *The Japanese Cruiser Takao*. Anatomy of the Ship Series. Annapolis, Md.: Naval Institute Press, 1994.
 U.S. Naval Archives
 Wiper, Steve. *IJN Myoko Class Cruisers*. Warship Pictorial 17. Tucson, Ariz.: Classic Warships Publishing, October 2002.
 Yamato Museum, City of Kure, Japan
 John Reeder
 John Snyder, White Ensign Models

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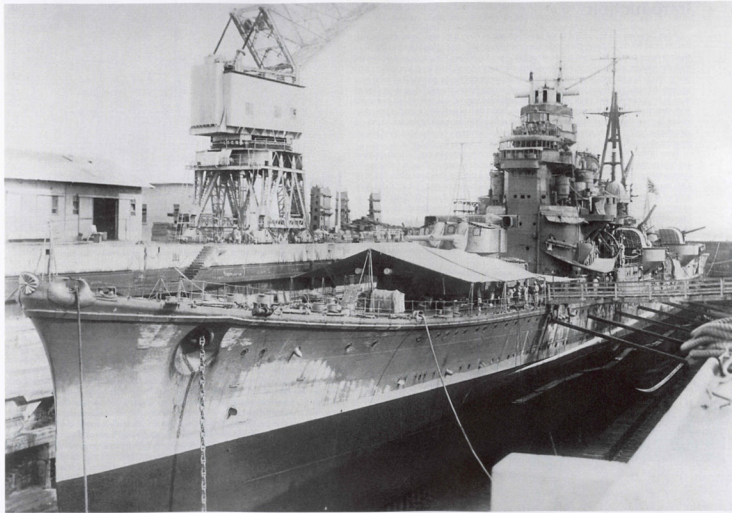
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Dedication:

To my son Kevin, with thanks for his support.

- *Ashigara* in the large King George VI Drydock at the Seletar Naval Base near Singapore on 31 December 1942 for hull maintenance and painting. This photograph, taken following the surrender of the city to Japanese forces, shows the sweeping lines of the bow and hull. The external degaussing coil that runs around the hull just below the deck was a key feature on Japanese wartime cruisers and consisted of a series of shielded wires which, when charged, neutralized the magnetic field of the ship and protected it from magnetic mines. The rangefinder atop the bridge was painted white at this time for identification purposes. The hull bulge, added during refitting in the late 1930s to improve stability and to provide additional protection against torpedoes, is visible below the waterline.



Introduction

When Japan entered World War II, the Imperial Japanese Navy (IJN) was the third largest battle fleet in the World, with only Great Britain and the United States having larger navies. The IJN's eighteen heavy cruisers in service in December 1941 were a combined force of large and powerful ships designed for attack rather than defense. Japanese heavy cruisers were long, low to the water, heavy, and fast, with very powerful gun and torpedo armament for the period. They were well equipped for night action, and the long, slim hulls and very high horsepower of these ships allowed them to be continually and easily upgraded with additional torpedo and anti-aircraft armament. With their flush decks and curved hulls topped off with large, pagoda-like tower bridges, they looked like no other cruisers designed by any other nation. The designers of the heavy cruisers gave them a highly original arrangement of curved funnels, turrets, and masts. They were at once beautiful and deadly as they sliced through the waves on their way to Pacific battles.

From 1880 to 1905 the IJN operated several classes of armored cruisers that had been designed and built by shipyards in Great Britain, France, and Italy and even some ex-Russian units (mostly constructed by French shipyards) that were captured during the Russo-Japanese War. Then, in 1905 through 1911, the IJN constructed two *Tsukuba*-class armored cruisers at Kure Naval Base and two *Kurama*-class armored cruisers at Kure and Yokosuka Naval Bases. The latter class was an improved version of the *Tsukuba*-class ships that had been plagued by numerous defects. These four units were among the first major warships to be designed and constructed in Japan. Because of their displacement of around 15,400 tons and main armament of 30.4 cm (12-inch) guns, it was, and still is, difficult to place these warships in a class. When the "battle cruiser" concept was developed in Great Britain to include ships with heavy armament but with light armor and high top

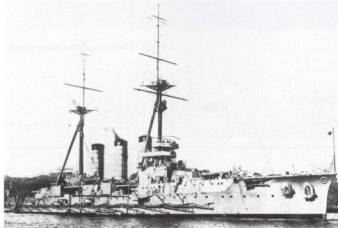
- The armored cruiser *Ikoma*, sister ship of *Tsukuba*, participating in a 1912 German fleet review. About this time the two ships were re-rated as battle cruisers



▲ The armored cruiser *Ibuki* was a sister ship of class leader *Kurama*. These ships had three funnels, compared to two funnels for the *Tsukuba* class.

speed, these ships were re-rated from protected cruisers to battle cruisers. They were later in 1923 re-rated to 'A' Class cruisers, but neither the *Tsukuba* nor the *Kurama* classes had an effect on the later design of the Japanese heavy cruisers that saw action during World War II.

The origin of Japan's World War II heavy cruisers can be traced to the experimental light cruiser *Yubari* which was launched on 31 July 1923. This small ship (having a $\frac{1}{3}$ trial displacement of 4,091 tons) was very different in hull shape, internal construction, armament, and profile from contemporary Japanese 5,500-ton light cruisers of the *Nagara* and *Sendai* classes. *Yubari* was designed during the early 1920s by the well-known naval constructor Hiraga Yuzuru and his assistant Fujimoto Kikuo to test the concept of a cruiser of high speed and great firepower combined with good protection on the smallest possible displacement. For the first time, side armor was used to strengthen the hull, and this design breakthrough resulted in a much lighter ship. This was important because successful warship design at the time was a compromise among the conflicting demands of offense (guns, torpedoes, and aircraft), defense (armor and anti-torpedo protection) and speed. To increase two of these naturally resulted in a reduction of the third, unless tonnage increased or a design breakthrough occurred which held displacement down. For example, the German heavy cruisers ("pocket battleships" as some called them) of the *Deutschland* class (11,700 tons) were very heavily armed and well-protected but had a top speed of only 28 knots. This fatal flaw allowed them to be hunted down by packs of faster but lightly armed British cruisers and finished off with gunfire. Due to the originality and clear thinking of Hiraga Yuzuru, the *Yubari* was better armed and better protected and was as fast as the larger 5,595-ton *Sendai*-class light cruisers of the IJN. This light cruiser also surpassed USS *Omaha* (7,050 tons) and the British 'D' (5,780 tons) classes. While *Yubari* was being built, the basic design for two 7,500-ton medium (later heavy) cruisers was approved about the same time that the important Washington Treaty was



▲ An improved version of the *Tsukuba* class, *Kurama* had tripod masts usually associated with dreadnought battleships.

drawn up. These ships, which drew heavily from *Yubari*, were later known as the *Furutaka* and *Kako* and were also designed by the Hiraga/Fujimoto team.

The Washington Treaty of 3 July 1922 limited the number of capital ships over 10,000 tons that each navy could possess. Nations which signed the treaty were required to limit the size of heavy cruisers to 10,000 tons; these ships were referred to as "treaty cruisers." Standard Washington treaty displacement was the tonnage of the ship ready for sea with full stores, ammunition, and crew complement but without fuel, reserve feed water, and lubricating oil. However, Japanese ships, following the Washington Treaty, were measured in full load condition minus a third of the full load fuel oil, lubricating oil, potable and reserve feed water and stores. This, not surprisingly, resulted in heavier ships than those of other countries. The treaty forced the IJN to abandon plans to build eight modern battleships and eight new battle cruisers and caused more attention to be placed on the building of heavy cruisers. Included within treaty limitations were two more medium cruisers and four heavy cruisers with a standard displacement of 10,000 tons.

Fujimoto took on design of the two medium cruisers, later known as the *Aoba* and *Kinugasa*, while Hiraga was in Britain studying that country's latest ship designs. These ships were originally to have been similar to the *Furutaka* class with six single 20.3 cm (8-inch) semi-turrets. Fujimoto, in Hiraga's absence, caved in to pressure from the general staff and altered this main gun arrangement to three twin 20.3 cm (8 inch) turrets along with a new type of aircraft catapult. These changes resulted in increased displacement which reduced stability compared with the *Furutaka* class. Hiraga was not happy about the weight gains, but *Furutaka* and *Kako* later were brought up to *Aoba* standards. The compromise made by Fujimoto, as well as the Japanese practice of designing the limited-displacement hull first and the rest of the ship later, set the stage for many similar changes to future ships, some of which had to be rebuilt to reduce top-heaviness.

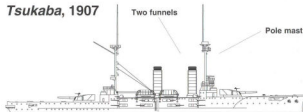
It is a fascinating historical note that the personalities of Japan's two greatest warship designers figured so heavily in outcomes of future actions between the IJN and the navies of the United States and Britain. Hiraga was a brilliant designer, a believer in end results who tolerated no compromise. Fujimoto was just as capable as Hiraga but was more concerned about what people thought of him rather than the task of building stable fighting ships.

Shortly after the Washington Treaty was signed, the Naval General Staff ordered Hiraga to design a new class of 10,000-ton heavy cruisers. On the cutting edge of warship design, Japan was the first nation to order "treaty cruisers." Again Fujimoto started design work on this design, to be later known as the *Myoko* class, with sister ships *Nachi*, *Ashigara*, and *Haguro*, while Hiraga went abroad to his next assignment. True to form, Fujimoto, under pressure, added eight broadside torpedo tubes and increased the number of 12 cm (4.7 in) high-angle (HA) guns from four to six. The ships of this class ended up with twelve torpedo tubes (later modified to rotating tubes), four more being added during construction. Until their final reconstruction these ships were slightly unstable with a standard displacement of 10,980 tons and a $\frac{1}{2}$ trial displacement of 13,071 tons.

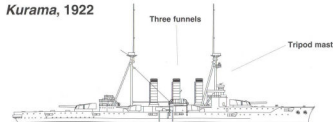
As it turned out, Japan's lead in oxygen-propelled torpedo technology made the addition of torpedo tubes on heavy cruisers an inspired decision. Many Allied ships were sunk by IJN torpedo-armed cruisers. However, predicted torpedo room explosions resulting from enemy hits caused serious damage or loss of some cruisers, including *Mikuma* off Midway, *Furutaka* off Savo Island, *Mogami* and *Suzuya* at Leyte Gulf, and *Aoba* in the Mowe Passage. In the end, two of the heavy cruisers were sunk by gunfire from ships, four were sunk by submarine-fired torpedoes, two were sunk by destroyer-fired torpedoes, and ten were sunk by aircraft action, usually bombs with some torpedo hits.

(► 8)

Tsukuba, 1907



Kurama, 1922



Japanese Heavy Cruiser Development

Drawings on these two pages are to same scale.

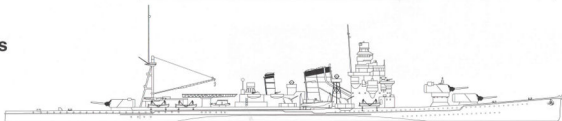
Yubari Class

Experimental Light
Cruiser *Yubari*, 1944



Furutaka Class

Furutaka, 1941



Aoba Class

Aoba, 1945



Myoko Class

Myoko, 1945



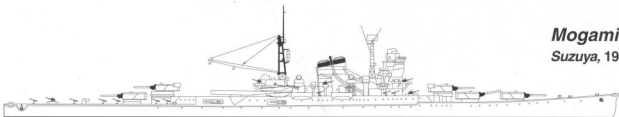
Japanese Heavy Cruiser Development

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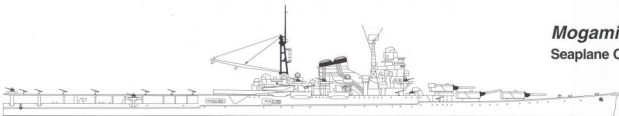
Takao Class

Takao, 1944



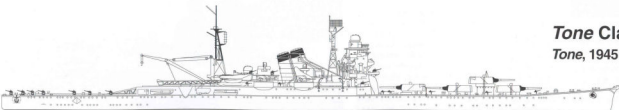
Mogami Class

Suzuya, 1944



Mogami

Seaplane Cruiser, 1944



Tone Class

Tone, 1945

As a result of a new U.S. building program which included eight new heavy cruisers, the Japanese Parliament authorized the construction of four more heavy cruisers, improved versions of the *Myoko* class. This new class was known as the *Takao* class with sister ships *Atago*, *Chokai*, and *Maya*, all of which were named after mountains. The Naval General Staff requirements seemed deceptively simple for such complex fighting ships. Their primary task was protection of the home support force and the driving back of enemy support forces. Responsibility for fleet reconnaissance was included. Their main opponents were expected to be U.S. and British heavy cruisers. Main armament was ten 20.3 cm (8 inch) guns capable of HA (high angle) fire, eight 61 cm (24-inch) torpedo tubes on the upper deck level, and anti-aircraft armament as on the *Myoko* class. Armor was designed to protect against indirect 20.3 cm (8-inch) shells and against direct and indirect 15.5 cm (6-inch) shell hits. Speed was to be over 33 knots with a range of 14,815 kilometers (8,000 nautical miles) at 14 knots. Three floatplanes were to be carried, and each was equipped to be a fleet flagship in peacetime and a squadron flagship in wartime.

Fujimoto started design work on the *Takao*-class cruisers early in 1925, and the plans were reviewed and approved by Hiraga in 1926 following his return from Great Britain. The design for



Naval Constructor Fujimoto Kikuo left a legacy of top-heavy warships. He was blamed for the capsizing of torpedo boat *Tomozuru* in 1934 and was dismissed in disgrace.

these ships was called the "improved *Myoko* design" as it incorporated new turrets, better magazine protection, and the use of electric welding to save weight. Twin catapults were added based on intelligence reports of the new U.S. "Treaty" cruisers that were on the drawing board at the time. Aluminum was used in the superstructure as a weight-saving measure. Each *Takao*-class cruiser cost 28.37 million yen compared to 28.15 million yen for the battleship *Yamato*. During World War II, the two great battleships, *Yamato* and *Musashi* were conserved in port until the U.S. Navy had controlling air power and were lost to aerial attack, but the cost-effective cruisers were in action throughout the war and sank many allied ships.

The largest heavy cruisers in the Imperial Japanese Navy were units of the *Takao* class which were commissioned in 1932. They were also the culmination of the design concept which began with the light cruiser *Yubari*. The goal of designers Hiraga and Fujimoto was to create a warship that would outclass contemporary foreign vessels, especially those of the U.S. and Britain. They did this by using design innovation as well as by breaching the displacement limits imposed by the Washington Treaty. But because the tonnage of these ships increased as new equipment was added,

they eventually became top heavy and had to be modified with hull bulges during their rebuilding in 1938 and 1939.

The *Takao* class was to become the prototype for the next four heavy cruisers, which were built in answer to new U.S. heavy cruisers. These new Japanese 'A' class cruisers were to be constructed in pairs in 1930-34 and in 1931-35. Building of this 'modified *Takao*' class was postponed by the signing of the London Naval Treaty by Japan on 21 April 1930, which limited the number of 'A' class cruisers to twelve. In place of the four 'modified *Takao*' class cruisers, design of 'B' or light cruisers mounting 15.5 cm (6 inch) main guns was started. These new designs (based on the 'modified *Takao*' class) were later completed as the *Mogami* and *Tone* classes of large light cruisers.

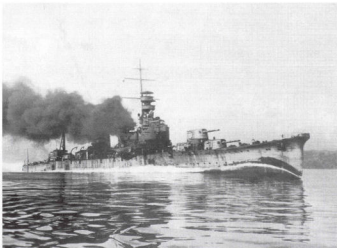
As *Chujo* (vice admiral) Hiraga was busy by this time designing the new super battleships *Yamato* and *Musashi*, Fujimoto became head of the Basic Design Section and was initially responsible for the *Mogami* and *Tone* classes. Unlike Hiraga, Fujimoto had to submit his designs to review and change by the Naval General Staff, whose alterations resulted in ships that were so unstable and weak they had to be completely reconstructed. The practice of demanding too much armament and superstructure on limited displacement resulted in the capsizing of the torpedo boat *Tomozuru* with heavy loss of life on 12 March 1934, and Fujimoto was held responsible for the accident. His dismissal deeply affected his health and he died suddenly in January 1935. He was a *Shosho* (rear admiral) at the time.

Main tasks for the *Mogami* class large light cruisers as directed by the Naval General Staff were the advanced protection of home support forces, the driving back of enemy support forces, and fleet scouting along with the totally unexpected requirement to take on U.S. and British 8-inch cruisers. From the beginning, design of the *Mogami* class cruisers allowed for wartime replacement of the 15.5 cm (6-inch) triple turrets with double turrets mounting 20.3 cm (8 inch) guns. This was an innovative way to circumvent the naval treaties but one which again resulted in top-heavy ships. To add further design problems, the Naval General Staff required an 8,500-ton displacement with

▼ *Furutaka* on a trial run off Nagasaki in 1926 following construction. Clearly visible are the semi-turrets which mounted single 20.3 cm (8-inch) main guns.



The great Naval Constructor Hiraga Yuzuru resisted IJN staff who wanted too much on limited hulls. His designs were not top-heavy until late in World War II, when many anti-aircraft guns were added. He later designed the super battleships *Yamato* and *Musashi*.



the capabilities of a *Takao*-class cruiser, capabilities nearly impossible to construct on this tonnage. In spite of innovations such as the extensive use of electric welding, tonnage could not be held down, and the basic design had a normal displacement of 9,500 tons.

Following the *Tomozuru*'s capsizing and the dismissal of Fujimoto, the new head of the Shipbuilding Section, *Taiza* (Captain) Kukuda Keiji, ordered measures to improve transverse stability of the *Mogami*-class ships, two of which had already been launched. The large *Takao*-type 'pagoda' bridge was replaced with a lower and more compact one. In addition, the foremast was simplified with a new tripod design. The seaplane hanger and the centerline searchlight position were deleted. The space between decks was reduced in the sister-ships *Suzuya* and *Kumano* which made the austere living accommodations even worse. Finally, an innovative set of ballasting and de-ballasting equipment was installed to take on several tons of seawater in the double bottom to stabilize the ships when in light condition. *Mogami* started trials in March 1935, and transverse stability was found to be within acceptable limits, but serious structural damage to the welded hull was discovered. This was repaired, but damage again occurred to *Mogami* and *Mikuma* during a typhoon. Both ships were laid up in dry dock at Kure harbor. *Suzuya*, then on trials, was also sent to dry dock. During extensive reconstruction that lasted until 1937, welded hull plates were replaced by riveted ones, additional hull plates were added to double the thickness on both sides of the keel, barbettes were disconnected from the deck and attached to the bottom of the hull, and expanded bulges were constructed over the tops of the original ones to improve transverse stability. These ships emerged from their rebuilding as superb cruisers. *Mogami* and sister ships *Mikuma*, *Suzuya*, and *Kumano*, along with the *Tone* and *Chikuma*, were sent to dry dock again in 1939 for replacement of the main guns and turrets as war approached. This preplanned move increased the number of Japanese heavy cruisers to 18 at the start of World War II. Construction at Kure of a final 'modified *Suzuya*' heavy cruiser named the *Ibuki* was put on hold once the hull was complete. The hull was later towed from Kure to Sasebo where conversion to a light carrier was started. This work was halted in 1945 to make way for mass production of small attack craft. The unfinished carrier was moored in Ebisu Bay near Sasebo when discovered by U.S. forces on 25 September 1945.

The design of the *Tone* class cruisers was initially the same as the *Mogami* class, but the Naval General Staff modified the requirements while the ships were still on the ways. Both *Tone* and sister ship *Chikuma* were redesigned as scouting cruisers with a larger capacity for seaplanes. Both ships were fitted out to carry both long and short range scout planes on the rear deck, while the main guns and turrets were located on the forward deck. Originally the twelve 15.5cm (6-inch) guns were housed in four triple turrets, but this was changed to eight 20.3 cm (8-inch) guns in four double turrets to bring the ships up to class 'A' heavy cruiser standards. This additional work was done at the same time units of the *Mogami* class were brought up to class 'A' standards.

Japanese heavy and light cruiser development was intertwined. The first three classes of 'A' class cruisers were built from enlarged and modified plans taken from the light experimental cruiser *Yubari*. Also, the last two classes of heavy cruisers were at first constructed as 'B' class or light cruisers and later upgraded to heavy cruiser status. This was an unusual and costly way to reach a total of eighteen heavy cruisers ready for action at the start of World War II.

Color Notes

While the IJN specified a single shade of gray for all warships (approximately equivalent to FS595: 35164), each of the four major navy yards — Sasebo, Kure, Maizuru, and Yokosuka — mixed their own. None of the shipyard colors precisely matched the specification, and none matched each other. Chips of these colors are available from Snyder & Short, and all four of the grays are available from White Ensign Models in their 'Colourcoats' range of enamels.



▲ *Kako* in 1930 with the light semi-turrets as originally designed, prior to addition of twin turrets and hull bulges in a 1936 rebuilding. The white bands indicated that *Kako* was the third unit of *Sentai* (squadron) 5.

Hulls below the waterline were painted in a red-brown primer (approximately FS595: 31310). Funnel tops and upper parts of the mainmasts were painted glossy black (FS 17038). During 1942 and 1943 the upper part of the foremast and the range finder/gun director at the top of the tower bridges was painted white on some units. Linoleum used on decks was a pinkish tan (approximately FS595: 20233) secured in place by thin brass strips. The chrysanthemum carried by all heavy cruisers on the bow was polished brass. Canvas shrouds were generally white or cream colored.

Nachi and *Maya*, when operating with the Northern Fleet, had white-painted aft funnels, probably to confuse enemy spotters. *Myoko*, when operating as a late-war stationary anti-aircraft platform off Sasebo, was in standard medium gray with dark gray patterns (FS 36118) painted over the original color.

Dimensional Notes

Prior to Japan's adoption of the metric system in 1921, some warship designs were made in English measurements. In this volume, dimensions of ships are given first in metric units, with the English units in parentheses.

English measures were also used in the official designation of naval guns before 1917, but changed thereafter to metric. However, the "official designation" of a naval gun was generally not its actual caliber but instead a "nominal caliber" rounded-off to the closest whole number from the actual caliber. For example, the "8 cm" gun had an actual caliber of 7.62 cm because it was based on a 3-inch Vickers prototype. In this volume, the official IJN designations for Japanese naval guns are used, with nominal calibers given first in metric units and English equivalents in parentheses. (►► 10)

Furutaka Class

Designed and developed by Vice-Admiral Yuzuru Hiraga, the *Furutaka* class incorporated new techniques that were pioneered in the experimental light cruiser *Yubari*. Even though the displacement of *Furutaka* on completion was more than planned, 8,000 tons was still a very low tonnage for the armament mounted. This was achieved due to the inclusion of side armor belts as structural components, a design breakthrough that allowed more weapons, higher speed, and better protection than equivalent cruisers from other nations.

These ships were not true 'Treaty Cruisers' but were the first cruisers built by Japan following adoption of Washington Treaty restrictions. They were authorized in 1922 to compensate builders for the loss of planned capital ships. To save additional weight without sacrificing longitudinal strength, the hull was flush-decked with a wavy sheer line, a design feature that was to become a trademark of Hiraga's work. In the *Furutaka* cruisers, this feature allowed for a designed freeboard of 8.5 meters (28 feet) at the bow and only 4.7 meters (15.4 feet) aft. This, like all Japanese cruisers, was a very wet ship, but because it was so low to the water it was a superb fighting vessel. By comparison, USS *Brooklyn*-class light cruisers had a 30-foot (9.1 meters) aft freeboard.

In 1932-33, the 7.6 cm (3-inch) anti-aircraft guns were replaced with four 12 cm (4.7-inch) guns, eight 13 mm (.52-inch) anti-aircraft guns were added, and the aircraft launching platform was replaced by a catapult to accommodate larger and faster scout aircraft being developed. In comparison to the later *Aoba* class, there was no additional room for rotating torpedo mounts and new aircraft catapults. The six original single gun mounts had proved to be an uneconomical arrangement by the mid 1930s and *Furutaka* and sister-ship *Kako* were reconstructed between 1936 and 1939, bringing them up to *Aoba* standards, with two twin turrets forward and one twin turret aft to house six 20.3 cm (8-inch) main guns. These new turrets were protected with 2.54 cm (1-inch) armor. The original fixed torpedo tubes were replaced by rotating mountings. To compensate for added displacement, hull bulges were fitted to offset the weight gains and to improve stability by reducing top-heaviness in the design. As a result of this necessary addition, the *Furutakas'* speed fell from 34.5 knots to 32.9 knots, which was considered to be a fair trade.

Furutaka, 1926



Furutaka, 1941



▲ *Furutaka* steaming from Nagasaki to Yokohama on 5 April 1926. At this point, the forward funnel had not been raised. Stack gasses surrounded the bridge on occasion with obvious results.

In wartime configuration, *Furutaka*-class cruisers were nearly identical to later cruisers of the *Aoba* class. They were 185.2 meters (607.6 feet) in length with a beam of 16.9 meters (55.4 feet) and a mean draft of 5.6 meters (18.4 feet). Standard *Furutaka* displacement was 8,700 tons, while their trial displacement was 10,507 tons. Full war-load was over 11,273 tons. The *Furutaka* class had four-shaft geared turbines driven by ten Kanpon oil-fired boilers providing 103,390 shaft-horsepower and turning four screws. Maximum speed was 32.9 knots. They had a range of 12,964 kilometers (7,000 nautical miles) at 14 knots. Complement was 639 officers and men, compared to the U.S. Navy's *Pensacola* class, which had 631 officers and men.

Furutaka-class cruisers were armored with 76.2 mm (3-inch) belts at the waterline (by comparison, USS *Pensacola* had only 2.5 inches of armor), 25.4 mm (1-inch) on the turret faces, and 35.5 mm (1.4 inches) on the deck. As originally constructed, the conning tower was not protected, but some armor was added during the final reconstruction.

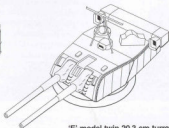
- ▼ The IJN was testing a new *Kako* funnel on 21 June 1928 when this photograph was taken. The new funnel shape was designed to keep stack gasses away from the bridge. It was found to be ineffective and was later modified.



Armament



'A'-model single 20.3 cm semi-turret as originally mounted on *Furutaka*-class cruisers



'E'-model twin 20.3 cm turret (replaced 'A'-model)

Furutaka's main battery during World War II consisted of six 20.3 cm (8-inch) Type 3 guns mounted in three double turrets, two forward and one aft. Secondary armament consisted of four 12 cm (4.7 inch) Type 10 HA (high angle) guns in single mounts that were used for anti-aircraft protection. Other guns were up to fifteen 25 mm (1-inch) Type 96 machine guns in twin and triple mounts. The cruisers carried sixteen 61 cm (24-inch) Type 93 torpedoes and mounted two quadruple, trainable, and shielded Type 1 mounts. One reconnaissance seaplane was carried.

Furutaka was laid down on 5 December 1922 and completed by Mitsubishi on 31 March 1926 at Nagasaki. Sister-ship *Kako* was laid down on 17 November 1922 and completed by Kawasaki at Kobe on 20 July 1926. When commissioned, both ships were registered at the Yokosuka Naval Station, but by 1 February 1932 both ships were transferred to Kure where they remained until the two warships were removed from the Navy List. These were the first Japanese heavy cruisers, along with the *Mikuma*, to be lost (or expended because they were the oldest) during World War II.

Following commissioning, *Furutaka* became flagship of Sentai (Squadron) 5, which included the light cruisers *Natori*, *Yura*, and *Sendai*. On 1 August 1926, *Yura* was replaced by the newly commissioned *Kako*. Sentai 5 now included *Furutaka*, *Kako*, *Naka*, and *Jintsu* — a powerful squadron for the time. Sentai 5 participated in training and naval reviews throughout the 1920s and 1930s. On 1 December 1927, the day they were commissioned, the new *Kinugasa* and *Aoba* joined Sentai 5 with *Kinugasa* as flagship.

Between 1936 and 1939, *Kako* and *Furutaka* were modernized and emerged as completely different ships, very similar to the *Aoba* class. The single main gun semi-turrets were replaced with twin turrets mounting new 20.3 cm (8-inch) guns. Anti-aircraft armament was brought up to standard, and fixed torpedo tubes were replaced with quadruple shielded mounts located outboard on the upper deck on both sides of the catapult. The bridge was reconstructed to include modern fire control. New aircraft control equipment including a larger catapult was added to handle new types of aircraft that were on the drawing boards. The 12 original mixed-fuel boilers were replaced with 10 oil-fired ones of greater output. Trial weight following this reconstruction was 10,507 tons. The World War II histories of the *Furutaka* and *Aoba* classes are so intertwined that they are covered together following discussions of the *Aoba*-class heavy cruisers.

(►► 13)



▲ In 1931 *Furutaka* still had the light semi-turrets, but the forward stack had been raised.

▼ *Furutaka* steams past *Kinugasa* during maneuvers in October 1941. Both cruisers have the new twin turrets, hull bulges, and floatplane catapults.



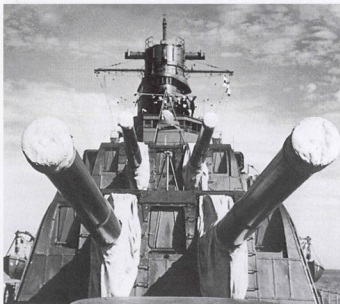


▲ *Furutaka* makes 32.95 knots on 9 June 1939 while on a full speed trial run following reconstruction. The new 'E' model twin turrets are clearly visible. The bow wave and wet foredeck were characteristic of all Japanese heavy cruisers.

▼ *Kako* during training operations in 1940. The Kawanishi E7K2, Navy Type 94 ('Alf') float-planes were carried until replaced by the new Aichi E13A1, Navy Type 0 ('Jake') float-planes in early 1942. The quadruple Type 1 torpedo launchers are clearly visible.



▼ The 'E' model turrets show up clearly in this 1941 photograph of the foredeck and bridge of *Furutaka*.



Aoba Class

Aoba and her sister *Kinugasa* were improved versions of the earlier *Furutaka* class with the same length but a marginally wider beam. Designer Fujimoto was responsible for the design of this class while Hiraga was abroad. His close work with the IJN resulted in a ship that was less stable during maneuvers but which made use of three twin turrets (unlike the original six semi-turrets on the *Furutaka* class), freeing up additional room for later installation of improved seaplane catapults and rotating torpedo launchers. Although Hiraga initially did not approve the design changes, the earlier *Furutaka* and *Kako* were brought up to *Aoba* standards during major re-fittings in the late 1930s.

Aoba and *Kinugasa* were the second class of medium (later heavy) cruisers to be built by Japan to Washington Treaty standards. They were authorized in 1923 to compensate builders for the losses of the new battleships and battle cruisers that were to be built throughout the 1920s before the Washington Treaty limitations stopped construction. They were the first Japanese ships to have seaplane catapults in the initial design. Both cruisers were brought up to 'A' Class (heavy cruiser) standards during a refit which lasted from 1938 to 1940. Due to increased weight, bulges were added to make the ships more stable. As a result, the beam was increased to 17.6 meters (57.8 feet), which reduced the top speed to 33.4 knots. The two warships rode even lower in the water following these modifications.

In wartime configuration, *Aoba*-class cruisers were 185.2 meters (607.6 feet) in length with a beam of 17.6 meters (57.7 feet) and a mean draft of 5.6 meters (18.4 feet). *Aoba* was slightly heavier than *Furutaka*, with a $\frac{3}{4}$ trial displacement of 10,850 tons. Full war load increased to over 11,660 tons by the end of World War II. The *Aobas* had 12 Kampon boilers driving four-shaft geared turbines providing 108,456 shaft horsepower enabling a top speed of 33.4 knots. Range was 12,950 kilometers (7,000 nautical miles) at 14 knots. Complement consisted of 680 officers and men on *Aoba*, which was fitted out as a sentai (squadron) flagship. *Kinugasa* operated with 657 officers and men.

Aoba was armored with 76 mm (3-inch) side belts that were 79.9 meters (262 feet) long by 4.12 meters (13.5 feet) high, at a 9-degree slope. Some armor was added to the conning tower and compass bridge during the last re-fittings.

Aoba's main battery (during wartime) consisted of six 20.3 cm (8 inch) Type 3 guns mounted in three twin turrets, two forward and one aft. Only the *Furutaka* and *Aoba* classes of Japanese heavy cruisers had this turret arrangement. The guns had a range of 28,900 meters (31,500 yards) and a muzzle velocity of 835 meters/second (2,739 feet per second), firing a 125.9 kilogram (278-pound) armor-piercing high explosive round. Secondary battery was four 12 cm (4.7-inch), 45 caliber Type 10 high-angle guns in single mounts. Other guns were up to fifteen 25 mm (1-inch) Type 96 machine guns in triple and double mounts. The cruisers carried sixteen Type 93 61 cm (24-inch) torpedoes, which were fired by two quadruple, trainable, and shielded Model 1 mounts. Depth charge rails were mounted on *Aoba* during her last major rebuild for reasons known only to the IJN. Two Navy E7K2 or E13A1 three-seat reconnaissance seaplanes were normally carried during World War II.

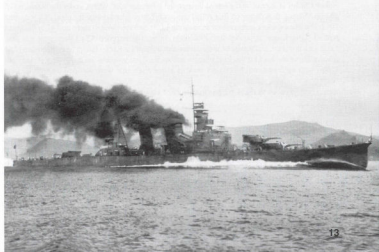
Aoba was laid down on 4 February 1924 and launched by Mitsubishi at Nagasaki on 25 September 1926. Sister-ship *Kinugasa* was laid down by Kawasaki at Kobe on 23 January 1924 and launched on 24 October 1926. When commissioned these ships were registered at Sasebo, but by 1932 they had been reassigned to Kure until they were taken off the Navy List.

At the start of World War II, *Kako* and *Furutaka* were part of Sentai 6, along with *Kinugasa* and *Aoba*, under the command of Shosho Goto Aritomo. These units participated in operations around Guam and later supported the second attack on Wake Island on 23 December 1941. Following this, they were based at the Japanese bastion at Truk Atoll, where they remained while other units went south to the sea battles around the Dutch Indies. Sentai 6 left Truk (►► 14)



▲ *Aoba* steams out of Kure Harbor at low speed in September 1927. Hull bulges and seaplane catapult have yet to be added. The wavy deck line is noticeable.

▼ *Aoba* making over 30 knots during trials on 23 July 1927. The large bow wave and black smoke from the funnels were characteristic of Japanese heavy cruisers.





Kinugasa at anchor in October 1927. Main differences between the *Aoba*-class cruisers and the earlier *Furutaka* class were the fatter aft funnel and the 'C' model twin turrets. The 'C' model turrets were rounder than the 'E' model turrets on the wartime *Furutaka* class cruisers.

to take part in the landings at Rabaul, New Britain, and Kavieng, New Ireland, on 23 January 1942. While the ships were at Rabaul, the base was attacked by aircraft from US Task Force 11, and the four cruisers searched unsuccessfully for the carrier USS *Lexington*. After refitting at Truk, the cruisers moved south to Rabaul where they operated with Sentai 18 in support of the landings at Lae and Salamaua. Following this, Sentai 6 joined with light carrier *Shoho* to cover landings at Tulagi. The cruisers received no damage, but *Shoho* was sunk during the Battle of the Coral Sea on 7 May 1942. Following this, *Kinugasa* and *Furutaka* escorted the carrier *Shokaku* on 8 May while *Aoba* and *Kako* protected the withdrawing Port Moresby invasion convoy. After these actions, Sentai 6 cruisers were refitted at the Kure Naval Yard after which they returned to Truk and then to Rekata Bay for maneuvers.

After U.S. landings on Guadalcanal, the four cruisers of Sentai 6 left Mowe Passage, joined heavy cruiser *Chokai* at Rabaul, and steamed through the infamous 'slot' where, under the command of Shosho Mikawa, they destroyed four Allied cruisers off Savo Island during the night of 8-9 August 1942. The five Japanese cruisers fired an amazing 1,020 20.3 cm (8-inch) shells and 45 of the lethal type 93 'Long Lance' torpedoes during the night action. The surprised Allied ships were less than 5,000 meters distant, and it must be remembered that units of the Rengo Kantai (combined fleet) had practiced long and hard for this kind of night action. Shell fire was directed by spotters of excellent vision with high powered binoculars seeking allied ships that were outlined by searchlights,

Kinugasa prepares to leave harbor in this 1927 view.



illuminating shells, and flares dropped by the cruisers' spotter seaplanes. An estimated 10 percent of the shells fired hit enemy ships, as did five or six of the 'long lance' torpedoes. The Australian heavy cruiser HMAS *Canberra* was disabled by over twenty 20.3 cm (8-inch) and 12 cm (4.7 inch) shells and by two 'Long Lance' torpedoes after which she was abandoned, and scuttled by her crew two hours later. The heavy cruiser USS *Chicago* was hit numerous times by shell fire and was stopped dead in the water by a 'Long Lance' torpedo hit that took off part of her bow. This ship barely survived and was repaired only to be sunk on 30 December 1943 by Japanese aerial torpedoes in the Solomon Islands. The heavy cruiser USS *Vincennes* sank off Savo Island after being hit by two or three 'Long Lance' torpedoes at point-blank range. The heavy cruisers USS *Astoria* and USS *Quincy* were sunk by Japanese shell-fire and, as reported by U.S. sources, possible torpedo hits. The U.S. and Australian heavy cruisers were not armed with torpedoes, and the JN's decision to override Hiraga's decision not to include torpedo armament so long ago had been proven correct, if only temporarily.

Chokai was hit by return-shell fire from USS *Quincy* and USS *Astoria* and withdrew to Rabaul where she was repaired. *Aoba* was hit by a shell on the port torpedo-tube mount, and a fire was started. As the torpedoes had already been fired at allied warships, no further damage was sustained, and the cruiser was repaired later at Kavieng. *Kinugasa* was hit by an 8-inch (20.3 cm) shell from the USS *Vincennes* which did not explode and a 5-inch (12.7 cm) shell from the destroyer USS *Patterson* which did little damage. While *Chokai* was underway back to Rabaul, Sentai 6 returned to Mowe Passage. On the way to the passage, *Kako* was hit by three Mk 10 torpedoes, out of a spread of four fired by the U.S. submarine S-44 on 10 August 1942. Portholes were open, and *Kako* capsized and sank in five minutes off Simbiri Island. This brave warship, the second Japanese heavy cruiser to be lost (*Mikuma* was the first) during World War II, was stricken from the Navy List on 15 September 1942. The three remaining cruisers of Sentai 6 were repaired and re-supplied and proceeded to Rekata Bay before moving to the Shortlands anchorage.

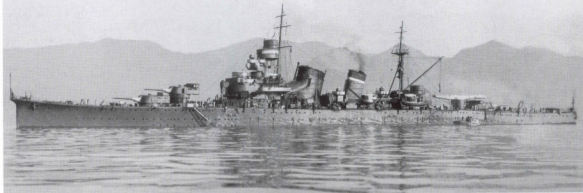
Chokai and Sentai 6, now without *Kako*, left the Shortlands to provide cover for convoys to Guadalcanal and returned without damage on 26 August. Then once again, on 10 October 1942, Sentai 6 was ordered to bombard the marine air base at Henderson Field and to provide cover for another convoy bringing supplies to starving Japanese troops on Guadalcanal. As they started the turn to starboard around Savo Island, the cruisers' main guns were loaded with incendiary shells to set fire to parked aircraft on the air base. The Japanese had erred in trying to repeat the August

Kinugasa, 1927



Aoba, 1945





◄ Aoba at anchor in 1931. The heavy cruiser wears the single white band around the aft funnel of a sentai (squadron) leader. The rigging and mainmast are visible, as is the new seaplane catapult.

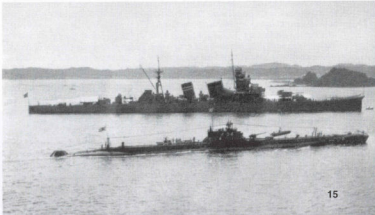
victories, for this time U.S. radar-equipped destroyers and cruisers, commanded by Rear Admiral Norman Scott, surprised Sentai 6 off Savo Island. *Furutaka* was quickly hit by 8-inch and 5-inch shells, which ignited the 'Long Lance' oxygen-propelled torpedoes. These explosions started fires which, in the darkness, drew additional shellfire from the U.S. ships. The engine room was hit, and *Furutaka* settled and sank stern-first near Savo Island, the third IJN heavy cruiser to be lost. *Aoba* had been hit by twenty-four 8-inch and 5-inch shells while turning with *Furutaka* to starboard. Explosions killed Shosho Goto Aritomo, who had been in command of Sentai 6 since 15 September 1941. In addition, two turrets were put out of action, *Aoba* with *Kinugasa* withdrew while still trying to reload main guns with armor-piercing rounds. The undamaged *Kinugasa* man-

aged to fire several salvos from 7,312 meters (8,000 yards) at USS *Boise*, which had unwisely switched on her searchlights in the darkness. Eight 20.3 cm (8-inch) shells hit *Boise*, one of these hitting the water about 39 feet (12 meters) from the light cruiser's starboard side, then diving and piercing her side about 10 feet (3 meters) below the waterline, and exploding in the forward 6 inch (15.5 cm) shell magazine. The U.S. Navy speculated that this hit would have sunk *Boise* had not seawater pouring in through the shell hole put out the magazine fires. Two shells from *Kinugasa* also hit the heavy cruiser USS *Salt Lake City* but did little damage. The two remaining Japanese heavy cruisers were back in the Shortland Islands the next day, where *Kinugasa* became the flagship of Sentai 6. *Aoba*, however, went to Truk, where inspections by Admiral (H 16)

▼ The three-turret layout of *Kinugasa* is visible in this 1928 photograph. The *Aoba* and *Furutaka* classes were the only classes of Japanese heavy cruisers to have three turrets.



▼ *Kinugasa* sits at anchor off Kure in June 1929 as the Model 3A fleet submarine I-54 slowly glides past.



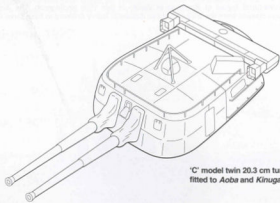


Kinugasa steams at about 25 knots in this 1935 aerial view. The rounded 'C' model turrets are clearly visible as are the black mainmast and seaplane catapult. These 10,000-ton heavy cruisers had very sleek and modern lines for their time.

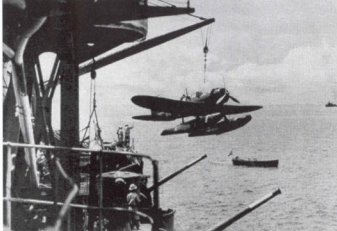
Yamamoto confirmed the need for heavy repairs, and the cruiser was sent to Kure where she immediately went into dry-dock.

On the night of 14-15 October 1942, *Chokai* and *Kinugasa* of Sentai 6 shelled Henderson Field again and withdrew safely back to the Shortlands. Following another cover mission, Sentai 6 was disbanded and *Kinugasa* was attached to the Eighth Fleet to replace units of Admiral Mikawa's force that had returned to Japan for refitting. Then, during a repeat operation to Guadalcanal that was becoming predictable, *Kinugasa* was lost. *Chokai*, *Kinugasa*, *Maya*, and *Suzuya* bombarded Henderson Field to cover a Guadalcanal-bound convoy. The shelling of the airfield was a success, but on the way back to the Shortlands, the cruisers were attacked south of the New Georgia Group on the morning of 14 November by aircraft from the carrier USS *Enterprise*. *Kinugasa* was hit by a 500-pound (223 kg) bomb released by a Douglas SBD-3 dive bomber. The bomb struck the bridge and exploded on the armored deck below the waterline, killing *Taisa* Sawa Masao and causing heavy flooding. Additional near misses ignited aviation gasoline tanks, blocked the rudder, and increased flooding. Two hours later *Kinugasa* capsized and sank. This brave ship, lost as a result of faulty planning, was removed from the Navy List on 15 December 1942. This loss left only the damaged *Aoba*, which at the time was undergoing repairs and modifications at Kure, of the four original heavy cruisers of the two classes. Repairs were completed on 15 February 1943 — a long time compared to repair times for U.S. ships like *Boise*, which was back in action in several months. *Aoba*'s anti-aircraft defenses were beefed up, and depth charge chutes were added.

Armament



'C' model twin 20.3 cm turret as fitted to *Aoba* and *Kinugasa*.



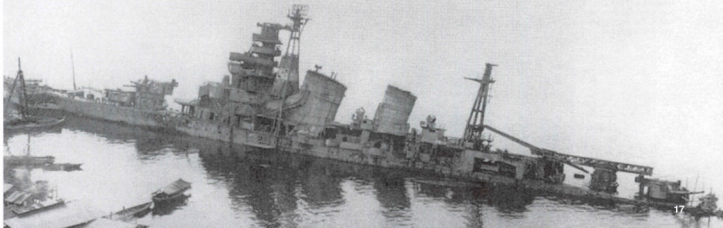
Aoba's mainmast derrick hoists an Aichi E13A1 Navy Type 0 floatplane back to position on the afterdeck in this 1943 view. Two of the 12 cm (4.7-inch) Type 10 high-angle guns are visible.

Aoba's end came on 28 July 1945 when the heavy cruiser was hit by four 500-pound (225 kg) bombs, which split her hull open and wrenched off her stern. She is shown here resting on the bottom off Nabe near the Kure Naval Yard. The late war tripod mast is visible along with the air search radar mounted at the top. The torpedo launchers were housed within a new armored superstructure, similar to the later *Myoko* class heavy cruisers.

No replacement for the shot-up turret number three was available so, while this was being repaired, a Type 96 25 mm (1-inch) triple mount was fitted.

As soon as time-consuming repairs were completed, *Aoba* left Kure for Truk where *Taisa* Yamamori Kamenosuke became the commanding officer. The cruiser called at Rabaul and then anchored in Mowe Passage on 4 March 1943. Almost a year had passed since *Aoba* had last been in this anchorage with Sentai 6, and it was now a far more dangerous place. While waiting for orders, *Aoba* was attacked by skip-bombing B-17s. These bombers came in fast just over the water to release their bomb loads. At this level the bombs skipped when they hit the water at a shallow angle. A 500-pound (225 kg) bomb struck the aircraft deck. Two stored Type 93 'Long Lance' torpedoes exploded beneath the aircraft deck, damaging the hull and engine room. Once again, Hiraga was proven right about his reluctance to add torpedo armament to his cruiser designs. The light cruiser *Sendai* tried to tow *Aoba* to Truk but had to beach her to keep her from sinking. During the next few harrowing and exposed days, the repair ship *Yamabiko Maru* pumped sea water out of *Aoba* and patched her up enough to allow *Sendai* to tow her to Truk. She was again inspected and sent limping under her own power back to Kure, where she was again put into dry dock on 1 August 1943.

On 25 February 1944 *Aoba* finally emerged from repair at Kure and further modification at Singapore as the flagship of Sentai 16 under the command of *Shosho* Sakonju Naomasa. She made several transport runs from Singapore to the Dutch Indies and the southern Philippines as Japanese transports were mostly sunk or in hiding by this time. A planned commerce raid on Allied sea lanes in the Indian Ocean with heavy cruisers *Tone* and *Chikuma* was cancelled. *Aoba* continued to carry supplies and weapons to isolated units until 4 July 1944 when she was laid up at Lingga Roads in Singapore for minor repairs. Then, while making for Manila with the light cruiser *Kino*, *Aoba* was hit by one of six 21-inch (53 cm) Mark 14 torpedoes fired by the submarine USS *Breath*. This hit flooded the engine room, and *Kino* took the stricken heavy cruiser in tow to Cavite Naval Base near Manila. U.S. bombers narrowly missed *Aoba* while she was being repaired, after which she steamed back to Kure where she once more was placed in dry-dock on 12 September 1944. Waves of carrier aircraft damaged *Aoba* while she was under repair, and she was rated as a special guard (►► 20)





4 The once-mighty Aoba rests on the bottom in 1945. Clearly visible is a massive hole in the hull along the waterline caused by a 500-pound (225 kg) bomb hit. Even in this miserable condition, the sleek lines of the heavy cruiser are still evident. Some branches placed on the ship as camouflage are visible on the foredeck. The Royal Chrysanthemum crest is clearly visible on the bow.

► This starboard view of the sunken Aoba clearly shows the modified bridge complete with wind baffles. Turret doors are open, and anti-aircraft gun emplacements are visible. The Nabe hillside is in the background.





† Aoba during the start of scrapping in early 1946. The modified bridge can be seen in detail with the wind baffles clearly visible. Details of the 'C' model turrets include open doors as well as an open rangefinder hatch. The linoleum deck covering is wrinkled and torn in places. The little tug off the starboard side is interesting as is the salvage derrick on the port side. Harbor works of Kure Naval Yard are in the background.



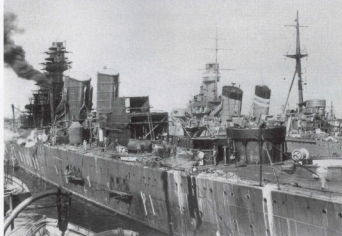
▼ One bomb sheared the stern off the stricken Aoba aft of the number 3 turret. The seaplane catapult and the mainmast and derrick can be clearly seen.

ship. Moored off Nabe near the Kure Navy Yard, the once-mighty heavy cruiser was used as an anti-aircraft battery. On 28 July 1945, *Aoba* was attacked by aircraft from Task Force 38. The heavy cruiser took a fatal hit from a 500-pound (225 kg) bomb which flooded spaces below decks. On 28 July, *Aoba* again was hit by at least three 500-pound bombs dropped with great accuracy by a B-24 bomber. The hull was split open and the stern broke off. *Aoba* was taken off the Navy List on 20 November 1945. She was salvaged in place after the war.

Myoko Class

Myoko and her three sisters, *Nachi*, *Haguro*, and *Ashigara*, were approved in the 1922-29 Program and were the first heavy cruisers ordered to the displacement limits of the Washington Treaty and the first true 10,000-ton 'Treaty Cruisers' ordered and built by any nation. The hulls of this class were enlarged and lengthened versions of the same design as the *Aoba* class, with the characteristic wavy hull that had been introduced by Hiraga in the *Yubari* design. The ten main guns were housed in five double turrets, three forward and two aft, a configuration which became standard until the *Tone* class, which mounted four double turrets on the foredeck. Hiraga and Fujimoto were responsible for the design and construction of these cruisers. The focused Hiraga was initially able to keep these remarkable ships from becoming too top-heavy by constantly guarding against the staff requirements for additional equipment above decks. Hiraga recommended the addition of a twin turret aft but at the same time decided to abolish the torpedo armament which he considered to be dangerous. The General Staff countered that the margin of superiority (▶▶ 28)

Myoko, 1945



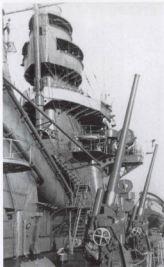
▲ *Myoko* being fitted out on 20 January 1929 following launching. The two sets of fixed triple torpedo tubes of a total of four are visible in the hull side. These were later replaced with four quadruple Model 1 mounts in new above-deck housings. At the same time a seaplane catapult is being added to *Aoba* in the background.

▼ *Ashigara* at anchor in 1934 prior to the addition of the hull bulges, torpedo housings, and a degaussing coil.





✦ *Nachi*'s conning tower in original form was narrow, as seen in this photo dating from the December 1928 coronation fleet review. In the foreground are 12 cm (4.7 inch) anti-aircraft guns.

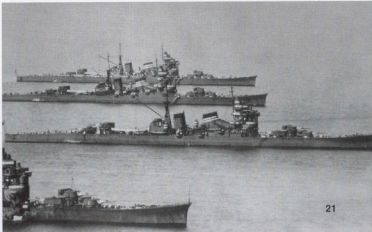


✦ Also dating from the December 1928 coronation fleet review, this view of *Nachi* clearly shows the linoleum strips covering the deck as well as the searchlights on the conning tower.



✦ *Nachi* at anchor shortly after her June 1929 commissioning. The 'C' model turrets were rounded rather than sharp-edged like the 'E' model turrets of the later *Takao* class.

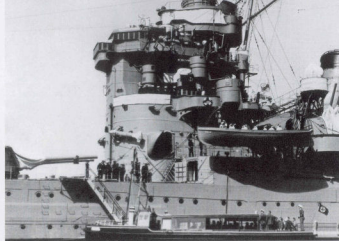
✦ The four new and powerful heavy cruisers of the *Myoko* class line up for this 1930 photograph. *Ashigara* is in the foreground followed by *Haguro*, *Myoko*, and *Nachi*. They comprise Sentai (Squadron) 4 of the Second Fleet of the Imperial Japanese Navy.





▲ *Ashigara* seen from astern on 1 June 1934. Clearly visible are the clocks mounted on the rear funnel and the extension of the main funnel. Funnels on all cruisers of the *Myoko* class were modified in 1930 to prevent stack gasses from entering the bridge.

▼ *Ashigara* anchored in Kiel Canal, Germany, while on a 1937 visit. The secondary anti-aircraft guns have been raised upward one deck, and the new torpedo mounts are enclosed in new deck housings which extend outward from the aft hull.



▲ German sailors visit *Ashigara* while the Japanese heavy cruiser is anchored in the Kiel Canal on her 1937 visit to Germany.





4 *Haguro* at sea in 1932 prior to extensive refitting.



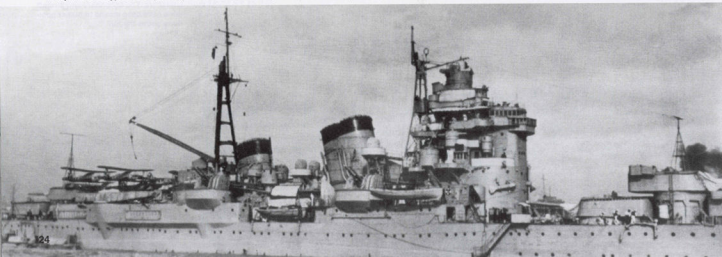
4 *Haguro* in 1936 shows her new above-deck housing for the trainable torpedo launchers. The secondary anti-aircraft guns have been moved to higher positions above the hull.

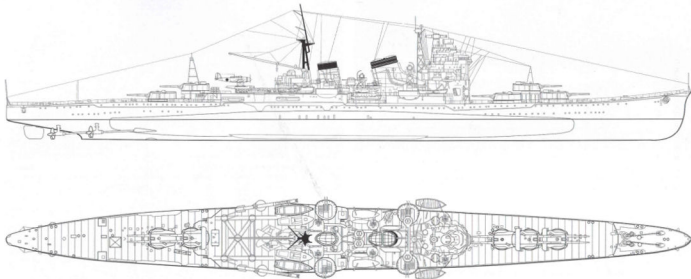


▲ *Myoko* on trials on 31 March 1941 following her second modernization. The heavy cruiser reached a top speed of 33.9 knots with a displacement of 14,984 tons, a performance which surpassed all other heavy cruisers of the time, with the exception of the *Takao* class

(Germany's *Prinz Eugen* was larger but slower). The most visible changes are the new foremast and detail changes to the main mast. Also visible are the large tripods atop numbers two and four turrets. Based on the bow and stern waves the heavy cruiser is making at least 30 knots.

▼ This view of *Ashigara* taken on 20 December 1940 shows the new mainmast and the Nakajima E8N2 Type 95 floatplanes (Allied code name 'Dave') carried on the catapults.





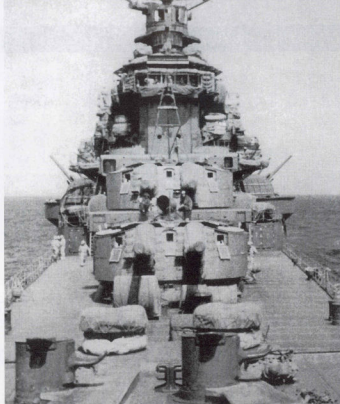
Specifications

Length: 203.8 meters (668.6 ft)
 Beam: 19.5 meters (64 ft)
 Draft: 6.36 meters (20.9 ft)
 Displacement: 14,950 tons at ½ trial weight
 15,993 tons full war load
 Propulsion: 130,000 shp/four screws
 Speed: 33.3 knots
 Complement: 970 officers and men
 Aircraft: 1 x E7K2 reconnaissance floatplane
 1 x E8N2 spotter floatplane or
 2 x E13A1 reconnaissance floatplane

Armament: 10 x 20.3 cm (8-in) guns in five turrets
 8 x 12.7 cm (5-in) high-angle guns
 in four twin mounts
 8 x 25 mm (1-in) heavy machine guns
 in four twin mounts
 4 x 13 mm (.5-in) machine guns in two
 twin mounts on bridge
 4 x 61 cm (24-in) quadruple torpedo launchers
 24 Type 93 'Long Lance' torpedoes

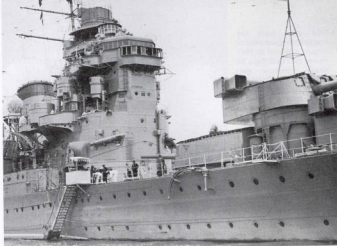


- ▲ *Haguro*, on training assignment in April 1936, plows through heavy seas in this rare photograph taken from *Nachi*. Japanese cruisers were longer, heavier, and lower than U.S. and British counterparts. They were magnificent fighting machines but had few accommodations for the crew.



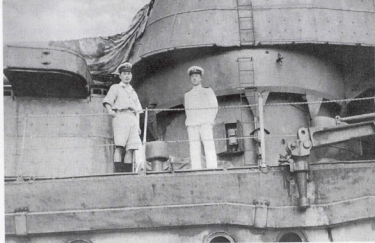
- ▶ *Haguro* in March 1941, prior to the Pearl Harbor attack. The new foremast, bridge and tripod on turret number 2 are clearly shown. Some wind baffling has been added to the bridge and the Model 'B2' secondary gun mounts are in place.
- ▼ *Haguro* during battle practice on 30 April 1936. The heavy cruiser is making at least 30 knots, as evidenced by the bow wave and remarkable wake line along the hull. The foredeck is extremely low to the water.





➤ *Ashigara* in 1937 during her visit to England for the Naval Review celebrating the coronation of King George VI. Clearly visible are rangefinders for the primary and secondary batteries. The torpedo-shaped paravanes hung on the superstructure are for towing mine-sweeping cables.

➤ *Nachi* at anchor in Makasar Bay, Indonesia, on 6 March 1942. The characteristic wavy hull line is evident as is the pronounced hull bulge.



➤ Details of turrets one and two on *Nachi*'s foredeck are visible in this 1942 view. These 'D' model turrets were rounded unlike the more angular 'E' model turrets of the later *Takao* class. A portion of the degaussing coil, which demagnetized the ship's hull, is seen at the bottom of the photo.

➤ By the end of the war, the damaged *Myoko* had been reduced to an anti-aircraft gun battery to protect Singapore. This photograph, taken on 25 September 1945 after the Japanese surrender, shows the heavy cruiser painted in patches of dark grey added over the top of the original medium gray paint. No Japanese heavy cruisers carried camouflage during their active careers. Submarines tied up alongside are the ex-German U-boats *U-181* and *U-862*, which had been taken into the IJN as I-boats.



held by the U.S. battle fleet (ten to six as specified by the Washington Treaty) could be reduced by the use of the new 61 cm (24-inch) 'Long Lance' torpedoes which were to be fitted on cruisers and destroyers. The idea was to execute long-range torpedo attacks against the enemy battle fleet, mainly at night and after the main gun battle. This doctrine was to prove remarkably successful in the early days of World War II until the U.S. Navy installed radar-controlled guns in warships. When the cruisers were constructed, fixed torpedo tubes, both fore and aft, were situated in the hull. During rebuilding in the late 1930s, trainable torpedo mounts were added behind armored housings at deck level. Additional modifications made by the Naval General Staff while HIRAGA was abroad in Britain raised the original $\frac{1}{2}$ trial displacement from 11,850 to 12,350 tons or considerably heavier than Washington Treaty limits. These additions made the ships top-heavy, a deficiency which was not addressed until new hull bulges were added in the late 1930s.

Due to conflicting priorities, *Nachi* was the first of the class to be completed and to be seen in public during the Imperial Cruise and at Emperor Hirohito's Coronation Review off Yokohama on 4 December 1928. Due to this first look at the new cruiser, the class became known by foreign navies as the "*Nachi* class;" however, all the ships were officially termed the "*Myoko* class" by the IJN. *Myoko* was the third ship completed even though it was the first to be laid down and launched.

In wartime configuration, *Myoko* class heavy cruisers were 203.8 meters (668.5 feet) long and had a beam of 19.5 meters (64 feet). The comparable "Treaty" cruiser USS *Chicago* was 600.2 feet (182.9 meters) long and had a beam of 66 feet (20.1 meters). *Myoko* had a mean draft of 6.36 meters (20.9 feet) and a displacement of 14,950 tons at $\frac{1}{2}$ trial weight. Full war load was well over 15,933 tons compared to USS *Chicago*'s 11,420 tons. Twelve Kampon boilers drove four sets of single-flow impulse-type geared turbines turning four shafts with three-bladed propellers. Top speed was 35.5 knots as originally constructed and 33.3 knots with the addition of hull bulges to improve stability. Power in final wartime form was 130,250 shaft horsepower. By comparison, 107,000 shaft horsepower drove USS *Chicago* at 32.5 knots top speed. Planned radius of action for the Japanese cruisers was 15,725 km (8,500 nautical miles) at 14 knots, but actual radius of action was closer to 13,875 km (7,500 nautical miles) at 14 knots. Complement was 920 officers and men for *Haguro* and *Nachi*, both of which were sentai flagships, and 970 officers and men for *Myoko* and *Ashigara*, which had been designed as kantai, or fleet flagships. Complement was 730 officers and men for the comparable USS *Chicago*.

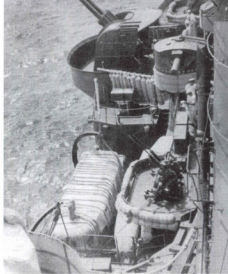
Myoko-class side armor was a belt 123.15 meters (404 feet) long and 3.5 meters (11.5 feet) high tapering to 2 meters (6.6 feet) on both ends. The armor belt was 102 mm (4 inches) thick at a slope of 12 degrees (the comparable USS *Chicago* had a 3-inch – 76.2 mm – belt). The Japanese cruiser had a 35 mm (1.4 inch) thick armored deck with an unprotected bridge.

Myoko's main armament in wartime was ten 20.3 cm (8-inch) guns in five twin Model 'D' turrets. Three turrets were on the foredeck and two turrets were aft. The secondary battery was eight 12.7 cm (5-inch) Type 89 HA guns mounted in four twin mounts along each side. Other guns were up to forty-five of the standard 25 mm (1-inch) Type 96 heavy machine guns mounted in triple, twin, and single mounts. Twenty-four Type 93 'Long Lance' torpedoes were carried for four quadruple, trainable Model 1 mounts which, in final wartime form, were positioned below the aircraft deck. Provision was made for three aircraft, one Navy Type 0 three-seat reconnaissance seaplane and two Navy Type 0 two seat spotter aircraft. In wartime, two planes were usually carried.

There were four builders of the *Myoko* class, with the class leader *Myoko* being constructed by the IJN at the Yokosuka Navy Yard. *Nachi* was built at the Kure Naval Yard, also by the IJN. *Ashigara* was constructed by Kawasaki at Kobe, and *Haguro* was built by Mitsubishi at Nagasaki. All ships were laid down and launched between 25 October 1924 and 22 April 1928. The cost of each cruiser was about 21.9 million yen. All four heavy cruisers were named after Japanese mountains as was the custom.

(►► 32)

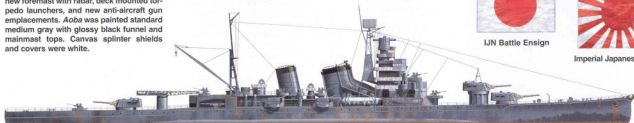
► This view from the searchlight tower next to *Haguro*'s funnel in 1941 shows two twin Type 25 heavy machine gun mounts and a Model A-1 anti-aircraft gun shroud. The seaplane catapult is just visible at the top of the photograph. The canvas rolls tied tightly around some of the mounts provided some splinter protection for the crew.



◄ *Nachi*, seen from *Haguro*, sortied from Formosa in March 1941 with fleet carrier *Hiryu* in the background. The 13 mm (.52-inch) Type 93 twin machine gun mount was fitted during August 1939 and later upgraded to a triple Type 96 25 mm (one-inch) heavy machine gun mount.



At the time of her sinking in July 1945, Aoba had been modified with the addition of a new foremast with radar, deck mounted torpedo launchers, and new anti-aircraft gun emplacements. Aoba was painted standard medium gray with glossy black funnel and mainmast tops. Canvas splinter shields and covers were white.

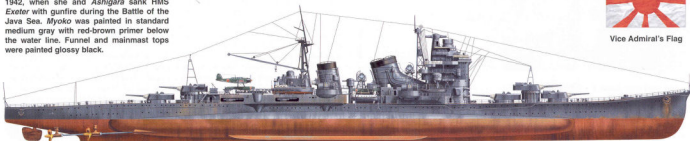


IJN Battle Ensign



Imperial Japanese Navy Ensign

Myoko as she appeared on 28 February 1942, when she and *Ashigara* sank HMS *Exeter* with gunfire during the Battle of the Java Sea. *Myoko* was painted in standard medium gray with red-brown primer below the water line. Funnel and mainmast tops were painted glossy black.



Vice Admiral's Flag

Maya in early 1944 looked much as she had when built, with the exception of additional anti-aircraft gun mounts. *Maya* and *Chokai* were not rebuilt as were *Takao* and *Atago* and remained top-heavy during their World War II careers. Colors were similar to *Myoko*.



The Nakajima E8N Type 95 Reconnaissance Seaplane (Allied code name "Dave") first flew in 1934 and served aboard ships as a spotter and general reconnaissance aircraft until late 1942.



Aichi E13A1 Type 0 Reconnaissance Seaplane (Allied code name 'Jake')

Takao as she appeared shortly before she was damaged in the San Bernardino Straits on 23 October 1944. By this date, *Takao* and sister *Atago* had been drastically modified to improve stability. The bridge was reduced in size, the mainmast was moved aft, and more anti-aircraft guns were added. Colors were standard medium gray and red-brown primer.



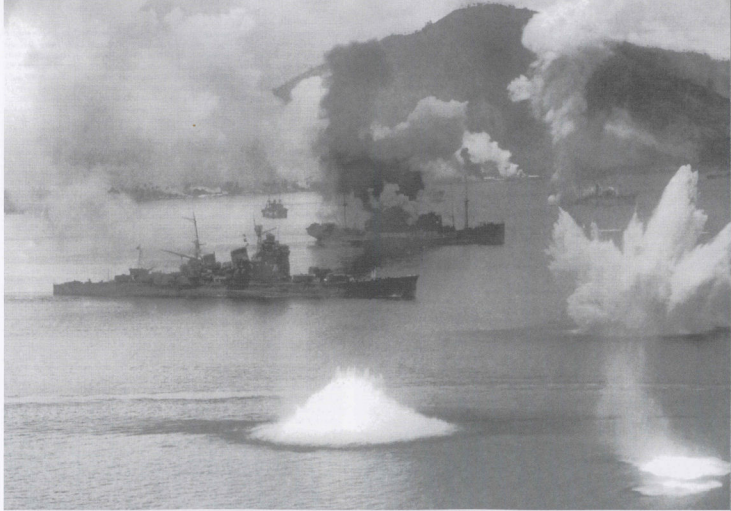
The Mitsubishi F1M2 Type 0 Observation Seaplane (Allied code name 'Pete') was carried on some Japanese cruisers from 1942 to 1945.

Suzuya at the time of her sinking during the Battle off Samar. When the original 15.5 cm main guns were replaced with 20.3 cm guns, the gun barrels were so long that the "B" turret guns would not clear the back of "A" turret, so they were carried in raised position. Colors were standard medium gray and red-brown primer.



The Imperial chrysanthemum as carried on the bows of IJN warships

Tone was a unique heavy cruiser with all main turrets on the foredeck. She survived several hits during the Battle off Samar, only to be sunk on 24 July 1945 by U.S. bombers in the Inland Sea. Colors were standard medium gray and red-brown primer.



This remarkable photograph was taken on 2 November 1943 from a low-level B-25 bomber over Simpson Harbor with Rabaul, New Britain, in the background. *Haguro* is in the foreground

with bombs falling wide. Even though several ships were hit, *Haguro* was undamaged. Rabaul was no longer a major Japanese base after this attack.

The four cruisers of the *Myoko* class were all commissioned between 26 November 1928 and 20 August 1929 and were registered at Sasebo until they were removed from the Navy List. After they were commissioned, the four cruisers formed Sentai (Squadron) 4 which was part of Kantai 2 (the Second Fleet). The cruisers operated together and participated in many training cruises and reviews during the 1930s. They were present at the naval review held off Kobe on 26 October 1930 where stack gases caused some problems with the bridge. The forward funnels of the four units were subsequently heightened by 2 meters to mitigate the problem, adding to the originality of the ships' profiles as designed by Hiraga. The ships helped transport elements of the 24th army to Shanghai in February 1932. On 1 December 1932 the four cruisers were placed on reserve while units of the new *Takao* class became the new Sentai 4. Later the *Myokos* were moved to Sentai 5 after the *Furutaka* and *Aoba* classes were moved to Sentai 6 — a sort of 'bumping' process that also seemed to assign value, with the older ships seen as less valuable. The four *Myoko*-class cruisers continued to play a role in maneuvers and reviews. Between 1933 and 1935 the units were reconstructed with the older main guns being replaced by new 20.3 cm (8-inch) Number 2 guns which brought them up to *Takao* standards.

Following their second reconstruction which was completed in April 1941, *Haguro*, *Myoko*, and *Nachi* were part of Sentai 5 under Shosho Takagi's command. Sister-ship *Ashigara*, however, became the flagship of Sentai 16 which was part of the 'Philippine Seizure Force' of Shosho Nobutake's Kantai 2 (Second Fleet) and operated separately from the other three cruisers for most of the war. On 2 December 1941 Sentai 5 received the Operation 'M' order "Niitakayama nobore" ("Climb Mount Niitaka") from the Rengo Kantai (Combined Fleet) while at Palau. The cruisers covered the Philippine landings at Legaspi and then returned to Palau, after which they covered landings at Davao. While anchored in Davao Gulf on 4 January, Sentai 5 was attacked by Java-based B-17 bombers, and *Myoko* was hit by a bomb. *Myoko* was laid up at Sasebo for repairs while *Nachi* and *Haguro* covered landings at Menado, Kema, Kendari, and later, Ambon

The brand-new *Atago* anchored at Kure Naval Yard on 30 March 1932. The huge bridge was partially constructed from aluminum, but the ship was still found to be top-heavy.

and Makassar, and finally Timor. Repairs on *Myoko* were completed by 20 February and the cruiser joined *Ashigara* and the other cruisers of the class. Then, on 27-28 February 1942, the critical Battle of the Java Sea was fought, with *Haguro*, *Nachi*, *Myoko*, *Ashigara*, light cruisers *Jintsu* and *Naka*, and fifteen destroyers facing an Allied strike force of heavy cruisers USS *Houston*, HMS *Exeter*, light cruisers HNMS *De Ruyter*, HMAS *Perth*, HNMS *Java*, and eight British, Dutch and U.S. destroyers. The Allied squadron was commanded by Dutch Admiral Doorman in flagship HNMS *De Ruyter*. The Allies did not fully understand the performance of the potent 'Long Lance' torpedoes, and Doorman lined his ships up parallel to the Japanese force and tried to close to gun range. A 'Long Lance' torpedo fired by *Haguro* hit HMS *Exeter*, which caught fire early in the evening of 27 February. Minutes later, the Dutch destroyer *Kortenaer* was struck by a torpedo fired by *Haguro* and sank after blowing up. Another Allied destroyer was sunk by gunfire and another struck a Dutch mine before sinking. HNMS *De Ruyter*, the allied flagship, was hit by a torpedo fired by *Haguro* and sank with heavy loss of life. Shortly after, the light cruiser HNMS *Java* disintegrated and sank after taking torpedo hits from *Nachi*. Early the following day, *Ashigara* caught up with and sank destroyer USS *Pillsbury* and gunboat USS *Asheville* with gunfire. *Myoko* and *Ashigara* sighted and shelled the already-damaged HMS *Exeter*, after which Japanese destroyers finished off the British heavy cruiser with torpedoes. *Myoko* and *Ashigara* then sank the escorting destroyer HMS *Encounter* with shellfire. While this action was being completed, USS *Houston* and HMAS *Perth* were trapped and sunk by torpedoes and shell fire from *Mikuma*, *Mogami*, *Natori*, and destroyers while they were trying to engage the Japanese landing fleet near Batavia. Reportedly, not one Japanese cruiser was hit during these encounters. The shock and destruction caused by the Long Lance torpedoes shattered the Allied force. The American and British cruisers were at a severe disadvantage because they carried no torpedoes and had little night-fighting training. It would be two long years until radar-directed guns changed the balance in favor of the Allies.

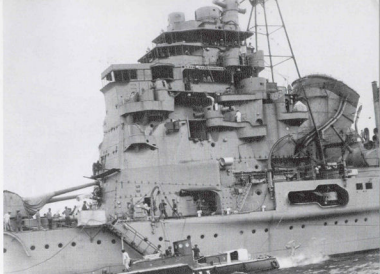
The straight rear stack was a unique feature of these heavy cruisers.



Myoko, *Haguro*, and *Nachi* returned to Sasebo for dry-docking, overhauling, and refitting. *Nachi* was refitted as a northern waters flagship and was assigned to Vice-Admiral Hosogaya's Fifth Fleet, which was getting ready for action off the Kurile Islands. *Myoko* and *Haguro* were off the Japanese home islands during the Doolittle-led bombing attack on 18 April 1942, and the two cruisers unsuccessfully pursued the U.S. strike force. Following the Tulagi invasion, Sentai 5 cruisers supported the invasion of Attu and Kiska Islands off the Alaskan coast. After the uneventful landings, Sentai 5 joined Sentai 6 and battleships at Truk Atoll for action in the northern Solomon Islands. *Myoko* and *Haguro* were sent to Sasebo for overhaul and refitting during which *Haguro*'s main-mast derrick was brought up to *Myoko* standards. After returning to Truk and Rabaul, the cruisers played a supporting role in the evacuation of over 11,000 soldiers from Guadalcanal. They then assisted in the evacuation of the Japanese garrison on Kiska Island in the Northern Pacific. Sentai 5 returned to Sasebo for refitting and received Type 21-2 radar in an attempt to keep current with U.S. cruisers. They returned to Truk and took part in an ineffective effort to bring the U.S. Fleet to battle off Tarawa, after which they took part in the Battle of Empress Augusta Bay on 1 November 1943. In this action, light cruiser *Sendai* was sunk, *Myoko* collided with destroyer *Hatsukase*, and *Haguro* received minor damage from five or six hits by 5-inch shells from U.S. destroyers. This sloppiness on the part of the Japanese was a result of a lot of running back and forth across the Pacific to put out 'brush fires' as U.S. forces regained the offensive after victories at Midway and Guadalcanal. The IJN was trying to do too much with too few resources. On the return to Truk, Sentai 5 laid over at Rabaul where they were attacked by U.S. Army bombers. Amazing photos (page 31) were taken from a low-level B-25 showing the sea exploding around the *Haguro*, which received no hits. Following another refitting at Sasebo, the cruisers of Sentai 5 took part in many supply missions and were spotted many times by U.S. submarines that were usually unable to attack the fast warships.

The cruisers provided support in the Battle of the Philippine Sea on 19 June 1944, which resulted in massive loss of Japanese carrier aircraft. After this debacle, *Haguro* and *Myoko* were again refitted, this time at Kure, where type-22 radar was added to the bridge wings of both ships. They became part of Vice Admiral Kurita's Center Force for the upcoming Operation *Sho-I-Go*, later to become known as the Battle of Leyte Gulf.

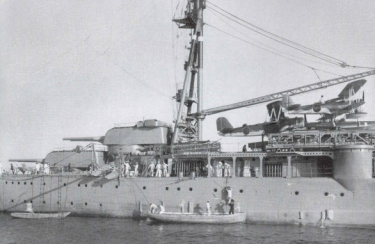
At the start of the battle, the Japanese Center Force entered Palawan Passage on 23 October 1944, and the submarines USS *Darter* and USS *Dace* sank Admiral Kurita's flagship, heavy cruiser *Atago*, along with *Maya*, and damaged *Takao*. *Haguro* took evasive action and was narrowly missed by torpedoes. Admiral Kurita was unharmed but shaken and transferred his flag to the super-battleship *Yamato*. In the next phase, the Battle of the Sibuyan Sea on 24 October 1944, the Japanese Center Force was attacked eleven times by over 250 aircraft from U.S. Task Force 38. The super-battleship *Musashi* was sunk, battleships *Yamato* and *Nagato* were hit by bombs, and battleship *Haruna* was damaged by near misses. Heavy cruiser *Tone* was next to be hit by bombs, and *Myoko* was hit by an aerial torpedo. Vice Admiral Hashimoto's flag was transferred to the *Haguro* at this point. Continuing its mission, the Center Force steamed into battle off Samar, opening fire on U.S. Task Group 77 which was made up of escort carriers and screening destroyers. The Japanese sank an escort carrier and three destroyers, but U.S. aircraft attacked and sank cruisers *Chikuma*, *Chokai*, and *Suzuya* and damaged *Tone* and *Haguro*. The latter was hit by a 100-pound (45 kg) bomb on turret number 2, killing thirty men and knocking out the turret. Admiral Halsey's fleet had been successfully decoyed by the last remaining Japanese carriers away from the invasion fleet, and with the destruction of Task Group 77, remnants of the Rengo Kantai had a clear way into the U.S. Philippine invasion fleet in Leyte Gulf. The vast U.S. fleet was left uncovered by Halsey's brash orders and could have been obliterated by the remaining Japanese battleships and cruisers. However, at the last moment, as he was almost within sight of the helpless invasion (►► 35)



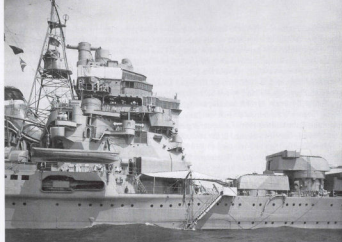
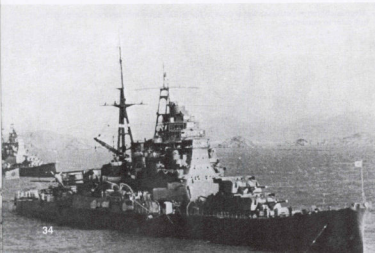
▲ The massive pagoda bridge of *Takao*, seen on 23 May 1932, rivaled those of many battleships. The heavy cruiser was commissioned soon after on 31 May 1932. The bridges were reduced in size when *Takao* and *Atago* were rebuilt. *Maya* and *Chokai* retained the original bridges. *Takao*-class cruisers differed from the *Myoko* class in that the torpedo launchers were built into the hull beneath the funnels.

▼ *Atago* anchored at Yokosuka Naval Base in April 1932. Crew members are scraping the hull prior to repainting.





- ▲ This view of *Takao*, dated 21 August 1939, includes the aircraft deck, mainmast, and turret number four. The floatplanes are a Kawanishi E7K2 (code name 'Alf') on the left and a Nakajima E8N2 ('Dave') on the right. A gas bottle storage area is visible between decks.
- ▼ *Maya* and *Chokai* visiting Amoy, China, on 21 October 1938. This angle shows the tremendous pagoda bridge, turrets, and aircraft catapults on a rather limited hull. These ships were noticeably top-heavy when maneuvering. The floatplane was a Kawanishi E7K2 ('Alf').



- ▲ Starboard side of *Chokai* on 18 July 1938. Rows of large binoculars line the upper layers of the pagoda bridge. Details of the foremast are visible.
- ▼ Nachi maneuvers in Manila Bay to avoid bombs from U.S. Navy carrier aircraft on 5 November 1944. The cruiser was hit by at least nine torpedoes and up to twenty bombs before breaking in two and sinking with great loss of life.

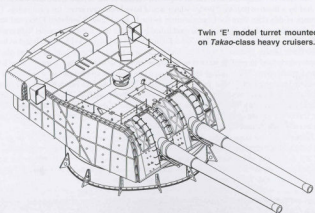


fleet, *Taisho* (Admiral) Kuriita, clearly shaken by his own losses, turned and ran. The Center force retired to Brunei where it took on fuel and ammunition. Damaged *Myoko* departed Brunei for Singapore and arrived there on 3 November. While under repair, the cruiser was attacked by B-29 bombers but was not further damaged. On 13 December 1944 while departing Singapore for Japan, *Myoko* was hit by a torpedo fired by submarine USS *Bergall*, which caused the cruiser to stop dead in the water. Escorting destroyer *Ushio*, along with other ships, towed the cruiser back to Singapore. Upon inspection, the IJN decided *Myoko* was not repairable and, as it was no longer possible to tow the cruiser back to Japan, the once-mighty *Myoko* was moored alongside the damaged *Takao* in Seletar Harbor as a floating anti-aircraft battery. At this point, dark gray patches were painted over the standard medium gray as a camouflage measure. After the British retook Singapore from the Japanese, they towed the damaged *Myoko* to the Straits of Malacca where the cruiser was scuttled. *Myoko* was removed from the Navy List on 10 August 1945.

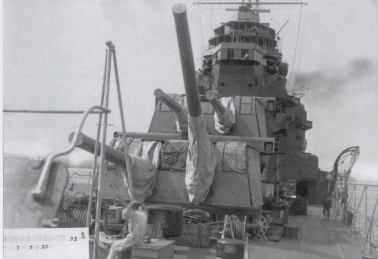
After escort missions with cruisers and battleships, the damaged *Haguro* departed Brunei for Singapore where the cruiser was dry-docked at Selatar Naval Base and turret number 2 was repaired. *Haguro* then made regular troop and supply runs to the Dutch Indies and the Bay of Bengal. The British hunted her down, and destroyers sank the cruiser at close range with gunfire and torpedoes. *Haguro*, fighting to the last, hit destroyer HMS *Saumarez* with 20.3 cm (8 inch) shellfire but sank on 16 May 1945. *Haguro* was taken off the Navy List on 20 June 1945.

On 17 March 1942 *Nachi* was transferred from Sentai 5, refitted to operate in northern waters and was assigned to *Chujo* Hosogaya as the Kantai 5 flagship. As on several heavy cruisers, depth charge racks were added to *Nachi*'s stern. The cruiser supported the convoy bound for the invasion of Attu Island and supported the subsequent actions at Dutch Harbor and Unalaska Island. On 26 March 1943 the heavy cruisers *Nachi* and *Maya*, along with light cruisers *Tama* and *Abukuma* and five destroyers, engaged the light cruiser USS *Richmond* (▶▶ 36)

Armament

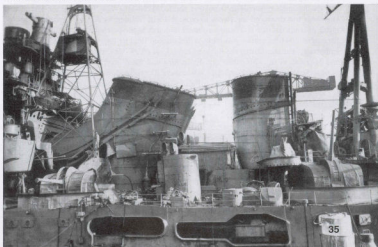


Twin 'E' model turret mounted on *Takao*-class heavy cruisers.



▲ The twin 'E' model turrets of *Takao*, seen on 20 March 1933. The crewman is apparently working on the tripod carried on top of turret number 2.

▼ *Maya* being refitted on 9 January 1943. The rear Model 1 quadruple torpedo launcher is visible. The B2 Model single dual purpose gun mounts had not yet been replaced with the new Model A1 double mounts.





Takao on trials outside Tokyo Bay on 14 July 1939. The heavy cruiser reached an amazing top speed of 34.25 knots with a displacement of 14,894 tons. At this point in her career the warship has a much smaller pagoda bridge, the mainmast has been moved aft, a new

foremast installed, and hull bulges have been added, all of which served to reduced the top-heaviness of her original design. *Atago* was rebuilt in a similar manner.

and heavy cruiser USS *Salt Lake City* with four destroyers in the Battle of the Komandorski Islands. After a confusing four-hour running gun battle, *Salt Lake City* and destroyer USS *Bailey* were damaged by shell fire. However, *Nachi* was hit by five 8-inch shells from *Salt Lake City*, and the Japanese re-supply mission was aborted. Following this defeat for the IJN, Chujo Hosogaya was disgraced and forced to retire and was replaced by Shosho Kawase. Following repair of battle damage at Yokosuka, *Nachi* took part in the evacuation of Kiska Island. On 6 September 1943 the cruiser was hit by a dud torpedo fired by the submarine USS *Halibut* but suffered no damage. During the Battle of Leyte Gulf on 24 November 1944, *Nachi*, *Ashigara*, and *Mogami*, along with battleships *Yamashiro* and *Fuso*, took part in the night Battle of Surigao Strait against U.S. battleships and cruisers. The old and slow Japanese battleships stood no chance and were sunk, but *Nachi* collided with *Mogami* and returned to repair stern damage at Coron in the Philippines. *Nachi* was bombed and strafed by waves of carrier planes off Cavite Naval Base as the cruiser tried to reach open water. Subsequent waves of aircraft managed to score at least three torpedo hits which broke the ship into three pieces. *Nachi* was removed from the Navy List on 20 January 1945.

Ashigara was the flagship of the South Expeditionary Fleet on 10 April 1942 and spent much time as a guard-ship at Surabaya in the Dutch Indies and shuttling supplies and troops in the Southwest Pacific. While operating with light cruiser *Oyodo* on 26 September 1944 *Ashigara* was attacked by B-25s and hit by a 500-pound (225 kg) bomb which caused light damage. The next day the heavy cruiser bombarded the American beachhead at San Jose, Mindoro. *Ashigara* transferred back to Singapore where the bomb damage was repaired in dry-dock. Off Sumatra on 8 June 1945 the British submarine HMS *Trenchant* managed to put five torpedoes into *Ashigara*, which capsized amid clouds of steam. The cruiser was removed from the Navy List on 20 August 1945.

Takao Class

This class of Treaty Cruisers was an improved version of the *Myoko* Class and was distinguished by a massive protected bridge which would have been appropriate for a battleship. The warships of this class were the largest cruisers in the Rengo Kantai (Combined Fleet) and were the culmination of the design principle established by Hiraga with the experimental light cruiser *Yubari*. The design was developed by Taisa Fujimoto who had succeeded Shosho Hiraga as head of the Basic Design Section of the Navy Technical Department. Torpedo launchers were placed at upper deck level in rotating mounts to hopefully prevent loss of the ship in the event of a hit in the torpedo room. The resulting explosion would be directed upward and outward instead of downward into the hull. Unlike the preceding class, the *Takaos* had an upright second funnel which made them easy to identify. The main guns could be elevated to 70 degrees making them useable against aircraft. The main armor belt was 12.7 cm (5 inches) thick — one inch thicker than that of the *Myoko* class. Due to the Japanese practice of trying to do too much with limited displacement, the cruisers of this class were top-heavy.

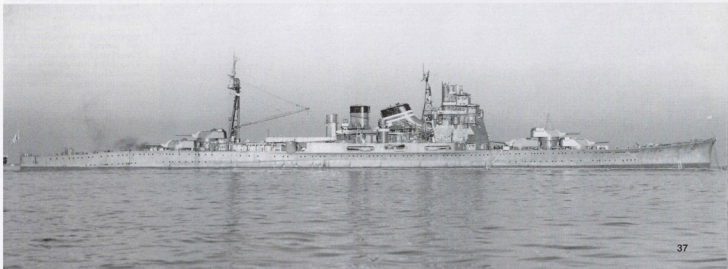
Takao and sister ships *Atago*, *Maya*, and *Chokai* were approved in the 1927-31 Program, and launched between 28 April 1927 and 5 April 1931. *Takao* and *Atago* were constructed by the IJN at the Yokosuka Navy Yard and the Kure Navy Yard respectively. *Maya* was constructed by Kawasaki at Kobe, and *Chokai* was constructed by Mitsubishi at Nagasaki. As was the custom, the four heavy cruisers were named after homeland mountains.

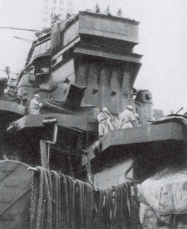
In wartime configuration *Takao* was 203.8 meters (668.5 feet) long and had a beam of 20.4 meters (67 feet). *Takao* had a mean draft of 6.32 meters (20.7 feet) and a displacement of 14,838 tons at ¾ trial weight. Full war load was 15,875 tons. Twelve Kampon boilers drove (► 43)



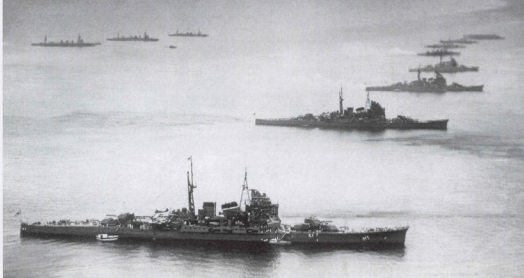
▲ *Atago* on her trial run on 39 August 1939 following reconstruction. The new appearance and performance of these rebuilt ships was so different from their original design that *Atago* and *Takao* had become a different class of ship.

▼ *Atago* on 30 November 1939. The new aft position of the mainmast and derrick is of note. White stripes on the funnel were removed as war became inevitable.





▲ Noise-reducing wind baffles had been added to the massive bridge of *Maya* by May 1944. Clearly visible are several gun emplacements and the air search 'bedspring' radar.



▲ The heavy cruisers *Chokai*, *Maya*, *Takao*, and *Atago* anchored with the second fleet in 1935.

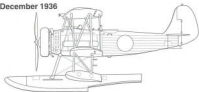


◄ *Maya* in 1940. The floatplane on the port catapult is a Nakajima E8N2 ('Dave') and the other is a Kawanishi E7K2 ('Alf'). The Alf was a long-range reconnaissance floatplane, while the Dave was a shorter range spotter floatplane.

Observation Aircraft

Nakajima E4N2

December 1932 – December 1936



Kawanishi E7K1 ('Alf')

December 1934 – 1938



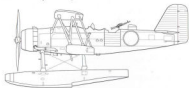
Nakajima E8N2 ('Dave')

December 1936 – Autumn 1942



Kawanishi E7K2 ('Alf')

1938 – 1943



Mitsubishi F1M2 ('Pete')

Autumn 1942 – 1945



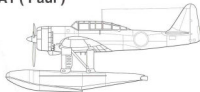
Aichi E13A1 ('Jake')

1942 – 1945



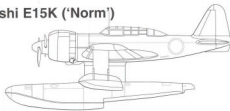
Aichi E16A1 ('Paul')

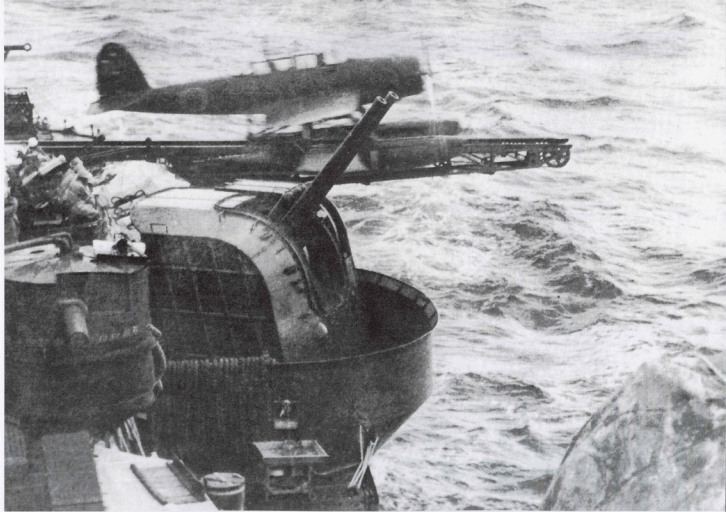
1944 – 1945



Kawanishi E15K ('Norm')

1945

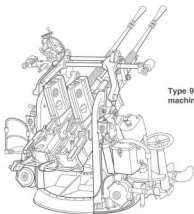




An Aichi E13A1 ('Jake') floatplane roars off Ashigara's port catapult during the Java Sea battles in May 1943. Note how low the floatplane sat on the catapult rails. A Type 94 high

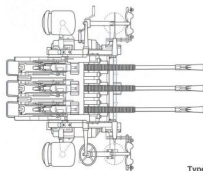
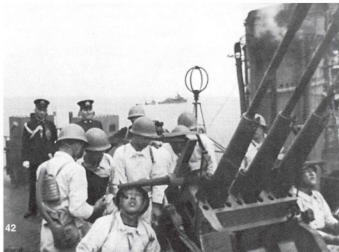
angle rangefinder is visible along with two twin Type 96 heavy machine gun mounts.

Anti-aircraft Armament

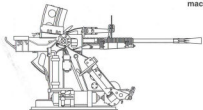


Type 96 double 25 mm
machine gun mount

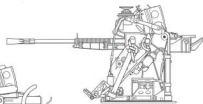
- A gun crew trains on one of the four 25 mm (1-inch) triple heavy machine gun mounts atop light cruiser *Oyodo's* hangar/staff headquarters in the fall of 1944. The rear of the funnel can be seen to the right with the top of the RDF antenna visible near the center of the photograph.



Type 96 triple 25 mm
machine gun mount



Type 96 single 25 mm
machine gun mount



Type 96 double 25 mm
machine gun mount

four sets of single-flow impulse type geared turbines providing a total 133,000 horsepower turning four shafts with three-bladed propellers. Top speed was 34.25 knots. Planned radius of action was 15,725 kilometers (8,500 nautical miles) at 14 knots. Complement was up to 970 officers and men when operated as flagships.

Takao-class side armor was 12.7 cm (5 inches) thick. The armored deck was 35 mm (1.4 inches) thick, and the bridge was protected by 10-16 mm (0.39-0.62 inch) armor plates.

Takao's main armament in wartime was ten 20.3 cm (8-inch) guns in five twin Model 'E' turrets, three on the foredeck and two aft. The secondary battery was eight 12.7 cm (5-inch) Type 10 HA guns in four double mounts, two on each side. Other guns were twenty-four 25 mm (1 inch) Type 96 heavy machine guns in triple mounts and twelve Type 96 machine guns in six twin mounts. Up to twenty-six single Type 96 machine guns were mounted during 1944 to provide more anti-aircraft protection. Twenty-four Type 93 'Long Lance' torpedoes were carried, fired by four quadruple rotating Model 1 mounts. Provision was made for three aircraft (two in wartime) on two aircraft catapults.

All four cruisers were commissioned between 30 March 1932 and 30 June 1932. They were registered at the Yokosuka Naval Yard until they were removed from the navy list. They replaced the earlier **Myoko**-class heavy cruisers in Sentai 4 of Kantai 2 (the Second Fleet). Between 31 May 1932 and 2 June 1938, the four heavy cruisers took part in training and fleet maneuvers, during which their top-heaviness became evident, leading to the rebuilding of **Takao** and **Atago** at Yokosuka in 1938 and 1939. The modifications essentially created new ships that had new profiles and were superior to the earlier models in the balance among armament, speed, and defense. **Maya** and **Chokai** were never modified as completely as the other two heavy cruisers.

Following their rebuild, **Takao** and **Atago** returned to Sentai 4 and cruised off China, supporting operations there. On 20 September 1941, **Maya** replaced **Takao** as flagship of Sentai 4

and shortly thereafter the four heavy cruisers started preparations for war. **Takao**, **Atago**, **Maya**, and **Chokai** joined battleships **Kongo** and **Haruna** of Sentai 3 in the Pescadores Islands as the main body of the Southern Area Force under Admiral Kondo. This group provided distant cover for early war operations in Malaya and Borneo. During February 1942, **Takao**, **Atago**, and **Maya** remained at Palau to carry out anti-submarine operations, a use for these ships as puzzling as the later installation of depth charge racks on them.

After actions off Port Darwin, Australia, and Java, **Takao** and **Maya** sailed to Yokosuka for a refit and installation of new twin 12.7 cm (5 inch) gun mounts. The four **Takao**-class ships trained in Japanese waters after which they (less **Chokai**, which sailed to Truk, where she operated with Sentai 6) escorted light carriers **Junyo** and **Ryujō** during the Aleutian operations concurrent with the pivotal Battle of Midway.

When the U.S. attacked Guadalcanal, Cruiser Sentai 4 (**Takao**, **Atago**, and **Maya**) teamed with Sentai 5 (**Myoko** and **Haguro**) and joined Admiral Nagumo's carrier force. This powerful force took on U.S. Task Force 61 in the Battle of the Solomons. All five heavy cruisers took part in night battles with U.S. forces and helped sink the burning hulk of the aircraft carrier USS **Hornet** at the end of the Battle of Santa Cruz.

On the night of 14-15 November 1942, **Takao** and **Atago**, along with the old battleship **Kirishima** and destroyers, were sent to bombard Henderson Field but ran into battleships USS **South Dakota** and USS **Washington**. The two U.S. battleships concentrated fire on the **Kirishima**, leaving the two heavy cruisers free to engage. **South Dakota** absorbed at least sixteen high explosive 20.3 cm (8-inch) shells fired from a distance of 5000 meters (5,450 yards) by the Japanese heavy cruisers. **Takao** was not hit, but **Atago** received minor damage. **Kirishima** caught fire due to explosions and was soon dead in the water and later sank. **South Dakota** withdrew under her own power and was repaired to fight another day. (►► 44)

Takao, 1932

Original mainmast position



Takao, 1944

Mainmast moved aft
Catapult relocated
Radar
Bridge reduced in size
Many additional AA guns



Maya, 1945

Radar
No. 3 turret replaced with AA emplacements



Suzuya being strengthened at the Yokosuka Naval Yard on 20 January 1936 following typhoon damage.



Following additional support actions during the evacuation of Guadalcanal, *Takao*, *Maya*, and *Atago* received Type 21 radar and triple 25 mm (1 inch) machine gun mounts at Yokosuka. Following this, they returned to Truk and took part in Rengo Kantai (combined fleet) operations around Eniwetok Atoll. The heavy cruisers of Sentai 4 were at anchor in Simpson Harbor at Rabaul on 5 November 1943 when they were attacked by carrier planes from U.S. Task Force 38. *Takao* was hit by a 500-pound (225 kg) bomb on the upper deck and the number two turret barbette. After another stay in dry-dock at Yokosuka and more shuttling to Truk, Sentai 4 participated in the Battle of the Marianas on 19-20 June 1944 but did not fire at enemy ships.

On 22 October 1944 the four *Takao*-class heavy cruisers steamed through the Palawan Passage at the start of the Battle of Leyte Gulf. On 23 October, the *Takao* was hit by two 53.3 cm (21-inch) Mark 14 torpedoes fired from the stern tubes of the submarine USS *Darter* which had just fired torpedoes from the bow tubes at the *Atago*. Torpedo hits flooded boiler rooms and damaged the rudder and starboard propellers. A fire was started and the ship took on a 10-degree list. Counterflooding righted the ship, now dangerously low in the water. After the fire was put out, the stricken *Takao*

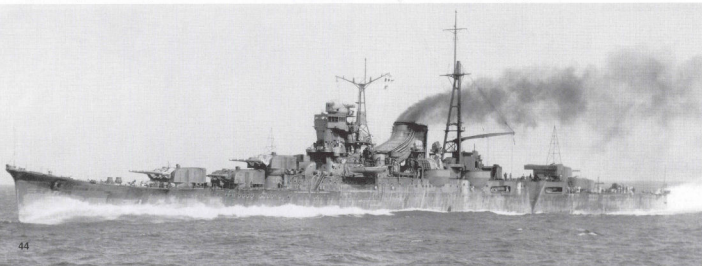
slowly made way to Brunei escorted by two destroyers. *Darter* had also hit the sister-ship *Atago* with a four-torpedo spread which reduced the ship, which later sank, to rubble. The shaken Admiral Kurita transferred his flag from the sinking *Atago* to the super battleship *Yamato*. At the same time, submarine USS *Dace* sank the proud *Maya* with a four-torpedo spread from the bow tubes which struck the cruiser on the port side. On 25 October, when the Japanese Central Force engaged light carriers commanded by Rear Admiral Clifton Sprague, *Chokai* was heavily damaged by hits from bomb-loaded TBM-1 aircraft from the light carrier USS *Kitkan Bay* during the Battle off Samar. *Chokai* was so badly damaged that she had to be scuttled by torpedoes fired by the Japanese destroyers. These actions showed conclusively that the *Takao*-class heavy cruisers were vulnerable to multiple torpedo or bomb hits, capable of absorbing two torpedo hits and escaping without sinking, but incapable of surviving four hits. *Atago* and sister ships *Maya* and *Chokai* were all removed from the Naval List on 20 December 1944.

The badly damaged *Takao*, now the last of its class, reached Brunei and then Singapore where it was partially patched up to become part of the First South Expeditionary Fleet along with *Myoko*, *Ashigara*, and *Haguro*. After the

▼ *Mogami* running trials in Bungo Strait on 20 March 1935. The triple 15.5 cm (6-inch) turrets are mounted at this point. *Mogami* achieved almost 36 knots at 12,669 tons displacement, but hull problems resulting from the high-speed run required her rebuilding.



▲ *Suzuya* under construction at the Yokosuka Naval Yard on 20 June 1936. The bases of the funnels are clearly visible as are the empty emplacements for the secondary batteries.



latter two heavy cruisers were sunk, *Takao* and *Myoko* were used off Seletar Base as floating anti-aircraft batteries because they were too badly damaged by this time for open-sea duty. Not knowing the condition of the cruisers, the British dispatched two midget submarines on 31 July 1945 to try to sink them. In the confusion, both midgets placed one-ton charges and at least six 35 kg limpet mines on the hull of *Takao*. The charges did not explode, but the limpet mines blew a substantial hole in the hull flooding some compartments. However, the ship did not sink until scuttled by the British in the Straits of Malacca on 27 October 1946. *Takao* was deleted from the Naval List on 3 May 1947, ending the proud history of the IJN Heavy Cruiser force.

Mogami Class

By the time the *Mogami*-class cruisers were being designed in the late 1920s, Shosho Hiraga was working on the super battleships *Yamato* and *Musashi*, and Taisa Fujimoto had become responsible for work on this cruiser class. Fujimoto could not keep the Naval General Staff from piling on new requirements for these ships to do more with less displacement. To add to his problems, the London Treaty limited new 'A' class cruisers. Accordingly, plans were made to construct the four heavy cruisers (*Mogami*, *Mikuma*, *Suzuya*, and *Kumano*) as large 'B' class, or light, cruisers. These warships were designed to be as large as some heavy cruisers and to carry fifteen 15.5 cm (►► 46)

Suzuya, 1944



Mogami, 1944



Ibuki, 1941 (as planned)

Mainmast moved aft as in *Takao* rebuild

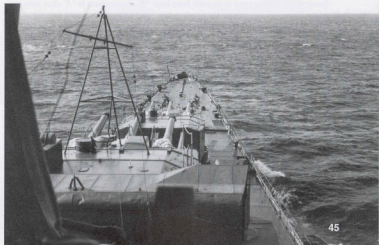


Ibuki as light aircraft carrier (not completed)



▲ *Kumano* underway at sea on 3 May 1939. The cruiser is making at least 30 knots, as indicated by the bow and stern waves.

▼ *Mikuma*, seen here on 3 May 1939, armed with 15.5 cm (6-inch) main guns in triple turrets. Prior to the beginning of World War II these were replaced with 20.3 cm (8-inch) guns in double turrets, immediately turning the *Mogami*-class large light cruiser into a heavy cruiser. Two of the triple turrets were later used on the light cruiser *Oyodo*. American forces first learned of the upgrade when they caught up with and photographed the damaged *Mikuma* during the Midway battles.





Mikuma on 12 April 1939 displaying her fine lines. Hull bulges are visible at the water line. Crew members are busy scraping the hull prior to painting.

(6.1 inch) guns in five triple turrets, similar to the USS *Brooklyn* class, and were a good match for most 'treaty' heavy cruisers armed with eight or nine 8-inch guns. The *Mogami*-class cruisers were the first Japanese ships to have triple turrets and were named for home-land rivers as was the custom for light cruisers.

Secret plans were in place to upgrade these large 'B' class cruisers to 'A' class units with 20.3 cm (8 inch) guns in five double turrets during wartime as a way around the treaties. The *Mogami*-class cruisers were even to have the huge tower bridges of the earlier *Takao*-class ships. To achieve all this, Fujimoto designed this new class to use extensive electric welding in the construction of the hulls to save weight. However, trials in October 1935 with *Mogami* and *Mikuma* showed welding defects in the hull, doubtful stability, and distortions that prevented training of the turrets. The situation was so bad that Fujimoto's replacement, *Taisa* Kikuda, ordered the first three units (*Mogami*, *Mikuma*, and the nearly complete *Kumano*) to be returned to the shipyards for a near complete rebuilding. *Suzuya* was rebuilt on the slips to bring it up to modified *Mogami* standards. Once the rebuilding was complete, these heavy cruisers were among the best in the world during Pacific actions of World War II. All this rebuilding was a time-consuming and costly way to build a heavy cruiser force.

The *Mogami*-class cruisers in wartime configuration were 200.5 meters (656 feet) long with a beam of 19.2 meters (63 feet). *Mogami* had a mean draft of 6.1 meters (20 feet) and a displacement of 14,112 tons at 2/3 trial weight. Full war load was 15,057 tons. The later *Suzuya* displaced 13,844 tons at 2/3 trial weight with a full war load of 14,795 tons due to weight-saving measures to reduce top-heaviness. Ten Kampon three-drum boilers drove four sets of single-flow impulse type geared turbines providing 152,000 shaft horsepower to four shafts with three-bladed propellers. They had twin balanced-type rudders rather than a single rudder like other Japanese heavy cruisers. Top speed was 35 knots, which was very good when compared to comparable cruisers. As designed, radius of

action was 14,800 kilometers (8,000 nautical miles) at 14 knots, but in practice the radius of action was closer to 13,875 kilometers (7,500 nm) at 14 knots.

Mogami-class side armor belt was 100 mm (3.9 inches), thinner than the 127 mm (5-inch) armor of the *Takao* class. The armored deck was 35 mm (1.4 inches) thick, and the bridge was protected by 100 mm (3.9 inch) armor plates on the sides.

In wartime form, *Suzuya* and *Kumano* carried a main armament of ten 20.3 cm (8-inch) guns in five twin turrets, three on the foredeck and two aft. The secondary battery consisted of eight 12.7 cm (5-inch) Model 98 HA guns mounted in four twin emplacements. Other guns included twenty-four 25 mm (1 inch) Type 96 heavy machine guns in eight triple mounts, eight Type 96 heavy machine guns in four twin turrets, and up to twenty-five Type 96 heavy machine guns in single mounts placed wherever there was room. Twenty-four Type 93 'Long Lance' torpedoes were carried for four rotating quadruple mounts. Provisions were made for three seaplanes, but in wartime only two were carried. For their displacement, these were very heavily armed and fast warships that sacrificed very little armor protection.

Mogami was constructed by the IJN at the Yokosuka Naval Yard, *Mikuma* by Mitsubishi at Nagasaki, *Kumano* by Kawasaki at Kobe, and *Suzuya* by the IJN at the Yokosuka Naval Yard.

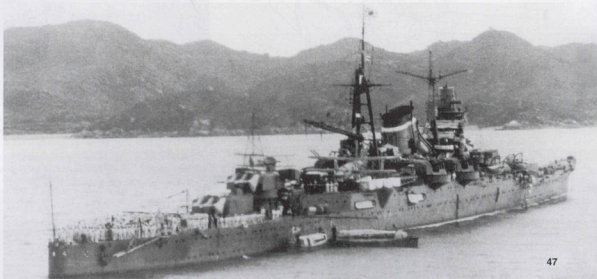
The four heavy cruisers of the *Mogami* class were laid down between 27 October 1931 and 5 April 1934 and were launched between 14 March 1934 and 15 October 1936. They were all in final form and commissioned by 20 October 1939. All four were attached to the Kure Naval Station until deleted from the IJN Naval List.

After their rebuilding and conversion was complete, the four cruisers were assigned to Sentai 7 of Kantai 2 (the second fleet). Sentai 7 was dispatched on 23 January 1941 to stop unrest between France and Thailand, which had erupted into a naval confrontation at Koh Chang Roads resulting in a complete victory for the French. A cease-fire was signed between French and Thai (►► 48)



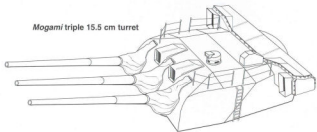
◄ *Suzuya* runs trials off Tokyo Bay early in 1935. Some secondary gun shrouds and rangefinders have not yet been installed. The fine bow of this cruiser resulted in a sleek bow wave and wake.

► This 3 May 1939 stern view of *Kumano* shows the location of the torpedo launchers and seaplane catapults. *Mogami*-class cruisers had much smaller pagoda bridges than the *Myoko* and *Takao* classes.

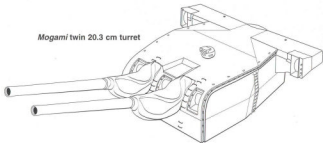


Armament

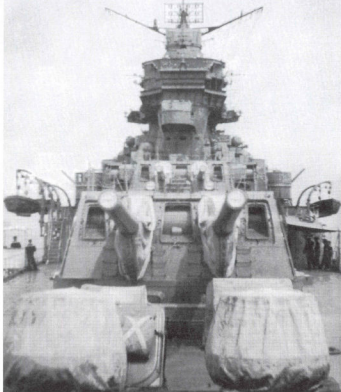
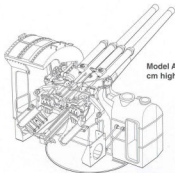
Mogami triple 15.5 cm turret



Mogami twin 20.3 cm turret



Model A-1 mount for 12.7 cm high-angle guns



Mogami had been rebuilt into a heavy floatplane cruiser by the time this 1943 photograph had been taken. The 20.3 cm (8 inch) turrets are clearly visible. Wind baffles and new air search radar have been added.

officials on the Japanese light cruiser *Natori* on 28 January 1941. Following this, the heavy cruisers of Sentai 7 were dry-docked at Kure for overhaul and the fitting of degaussing coils. They then took part in a series of training cruises in home waters. Between December 1941 and February 1942 Sentai 7 provided cover for landings all over Malaya, Burma, Java, and the Andaman Islands. On 28 February 1942, *Mogami* and *Mikuma*, with light cruiser *Natori*, found and sank USS *Houston* and HMAS *Perth* following the Battle of the Java Sea as the Allies began actions against Japanese landings near Batavia. The Allied cruisers were sunk with 'Long Lance' torpedoes and gunfire, while none of the Japanese cruisers was hit. During this confusing conflict, called the Sea Battle off Sunda Strait, a spread of torpedoes fired by *Mogami* at USS *Houston* missed but continued on (► 50)



▲ *Suzuya* rides at anchor in Kure Naval Harbor on 15 January 1939 as what seems to be a cutter race proceeds past. *Suzuya*'s torpedo launchers are directly beneath the floatplane

handling deck, unlike the earlier *Takao*-class cruisers, which carried the torpedo launchers under the funnels.

▼ Large light cruiser *Mikuma* on 28 March 1939 prior to her upgrade to a heavy cruiser. The hull bulge is visible at the waterline.



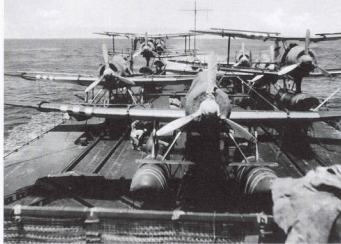


▲ *Mikuma* in 1939 plowing through moderate seas at high speed — at least 30 knots. The bow and stern waves are rising higher than the cruiser's deck. Japanese cruisers were very low to the sea and were wet ships for the crews, but their low hull line and heavy hull armor made them hard to damage in battle.

to sink Japanese minesweeper W-2 and four army transports. It seems neither the Allies nor the Japanese understood the full potential of the famed 'Long Lance' torpedoes.

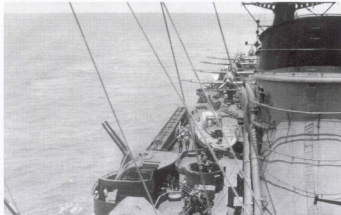
On 6 April 1942 *Sentai 7* encountered and sank eight British and American transports in the Bay of Bengal. The heavy cruisers expended many shells for the damage inflicted, as the Type 21 armor-piercing shells went right through the thin hulled merchant ships without exploding. Many hits looked like misses to the spotters on the cruisers and in a larger version of 'buck fever,' they directed excessive shelling.

Following dry-docking the heavy cruisers of *Sentai 7* provided close support to the Midway invasion force. On 5 June 1942 the cruisers were ordered to bombard Midway but, when only ninety nautical miles west of the island, were ordered to abort the mission. On the way back to the invasion force the cruisers sighted a submarine, and in the confusion *Mikuma* was rammed by *Mogami*, causing heavy damage to both ships. *Suzuya* and *Kumano* left the scene at high speed. *Mogami* could make only fourteen knots, and *Mikuma* trailed oil which led SBD dive bombers from the U.S. fleet and Midway to the stricken cruisers. Both ships, already damaged, were pounded by two attack waves of SBD dive bombers that scored numerous hits on both ships. One bomb hit *Mogami* amidships on the aircraft deck and started fires in the torpedo room immediately below, but the torpedoes had been jettisoned following the collision and there was no explosion. *Mikuma* was not as lucky; two hits in the engine room started fires that reached the vulnerable torpedoes. The resulting explosion wrecked the cruiser, the first 'A' class cruiser to be lost during World War II. *Mogami* was hit by five bombs and was wrecked so badly that she had to be dry-docked and rebuilt, finally emerging as a heavy seaplane cruiser later in the war.



▲ Four new Aichi E16A1 Zuiun ('Auspicious Cloud') floatplanes (code name 'Paul') and three Mitsubishi F1M2 Type 0 (code name 'Pete') floatplanes sit on the handling rails on *Mogami*'s afterdeck in August 1944. Following severe damage during the Midway battle, *Mogami* was rebuilt as a heavy floatplane cruiser, retaining three twin main gun turrets on her foredeck, but with the entire afterdeck dedicated to handling aircraft. In this configuration, *Mogami* performed a scouting role similar to that assigned to the Tone-class cruisers.

▼ Another August 1944 image of *Mogami* shows five Aichi E16A1 ('Paul') floatplanes visible on the flight deck in the background. In the foreground two Type 89 12.7 cm twin high-angle gun mounts can be seen along with two Type 96 triple 25 mm (1-inch) heavy machine gun mounts with an uncovered Type 95 machine gun director between them.



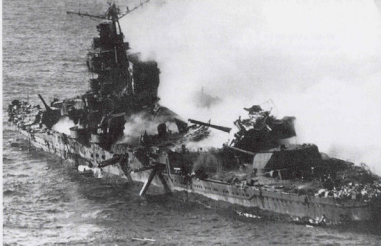
Sentai 7, now consisting of *Suzuya* and *Kumano*, supported operations off Burma but was ordered to join the carrier force north of Guadalcanal in time for the Battle of the Solomons. Two attempts by cruisers and destroyers to engage U.S. forces in night battle failed because the U.S. ships quickly withdrew. While *Kumano* was in dry-dock in Japan, *Suzuya* teamed with the *Maya* of Sentai 4 to shell Henderson Field on the night of 13-14 November 1943. *Suzuya* then steamed to Rabaul where she rejoined the *Kumano*.

At the end of the Solomons campaign, Number 21 air search radar was added to *Suzuya* and *Kumano* due to the escalating threat of aerial attack. At the same time their anti-aircraft armament was beefed up. Plans were reviewed to convert the two warships to anti-aircraft cruisers by removing part or all of the 20.3 cm (8-inch) turrets and replacing them with twin 12.7 cm (5-inch) gun emplacements, but these plans were never carried out. At the same time, modification and reconstruction of the damaged *Mogami* was being carried out at Sasebo Naval Yard. To increase the scouting capabilities of the fleet, *Mogami* was rebuilt as a floatplane cruiser, similar in concept to the newer *Tone* and *Chikuma*. The two damaged aft turrets were removed and replaced with an extended aircraft deck complete with rails to accommodate four 3-seat scout seaplanes and three 2-seat spotter seaplanes. The three foredeck turrets were left in place, giving the ship a definitely unbalanced appearance. Following re-commissioning on 30 April 1943, *Mogami* was attached to the First Fleet and later to Sentai 7 with the Third Fleet. On 19 July 1943, while protecting destroyers on the way to reinforce Vella Gulf, Guadalcanal-based TBM-1 aircraft bombed the ships at masthead level. *Kumano* sustained a near-miss from a 2,000-pound (900 kg) bomb which buckled hull plates and damaged boiler room plumbing. Several aft compartments were flooded. The heavy cruiser steamed to Truk and then to dry-dock in Kure, where she was under repair until 31 October 1943.

On 5 November 1943, while anchored at Rabaul with other units of Sentai 7 and the fleet, *Mogami* was hit by a bomb which exploded between decks near turrets one and two. Damage was severe, and the cruiser proceeded back to Truk under the escort of the *Suzuya*. The damaged heavy cruiser went back to Kure and was in dry-dock this time until 17 February 1944.

Suzuya and *Kumano* returned to Truk and performed shuttle and transport duties between Eniwetok, Kavieng, and Roi for a number of months. *Mogami* was removed from Sentai 7 and *Tone* and *Chikuma* were added to Sentai 7. The cruisers were ultimately attached to the Second Fleet and were stationed at Lingga Roads near Singapore where they were again modified by the addition of up to twenty-eight 25 mm (1-inch) machine guns wherever there was room to fit them. Sentai 7 and *Mogami* participated in the Battle of the Philippine Sea on 19-20 June without being damaged, but following this debacle, called the 'Marianas Turkey Shoot' by the Americans, the number of 25 mm (1-inch) heavy machine guns was increased to sixty in *Mogami*, fifty-six in *Kumano*, and fifty in *Suzuya* in a futile attempt to protect them against U.S. air attack. *Mogami* now carried eight of the new and fast Aichi E16A Zuiun ('auspicious cloud') seaplanes (Allied code name 'Paul').

Following more shuttling and transport work to the Philippines and Singapore, the cruisers of Sentai 7 and *Mogami* prepared for the upcoming *Sho-I-Go* actions which led to the Battle of Leyte Gulf. Sentai 7, consisting of *Suzuya*, *Kumano*, *Tone*, and *Chikuma*, was part of the Number 2 Butai (Force) which was attached to Admiral Kurita's Center Force for the attack. *Mogami* was part of Rear Admiral Nishimura's Number 3 Butai, along with Sentai 2, which consisted of the old and slow battleships *Yamashiro* and *Fuso* and four destroyers. This latter force was to attack through Surigao Strait as a decoy and potentially sacrificial force committed to divert American attention from the real mission of the Japanese forces which was to destroy the American invasion force off Leyte. While entering the Sulu Sea, *Mogami* was strafed by rocket-carrying F6F Hellcat fighters on 24 October 1944, resulting in loss of life and light damage to the aircraft deck. Then on 25 October Number 3 Butai was attacked by torpedo boats that were driven off by searchlight-controlled gunfire. *Mogami* turned north into Surigao Strait (► 52)



A collision between *Mikuma* and *Mogami* resulted in both heavy cruisers being caught and bombed by U.S. aircraft on 7 June 1942 during the Battle of Midway. *Mikuma* was hit by at least four 500-pound bombs near the high-angle gun deck. Resulting fires ignited the torpedoes which blew away the rear funnel and mainmast. Damaged torpedo launchers can be seen protruding outward over the water. Crewmen huddled near the stern await rescue. *Mikuma* sank during the night, and *Mogami*, hit by five bombs, barely escaped to be rebuilt as a heavy floatplane cruiser.

Mikuma lists to port prior to sinking on the evening of 7 June 1942. Crewmen on the stern have erected a canvas cover over their position. Exploding torpedoes have wrecked *Mikuma* amidships, and smoke pours out of massive holes resulting from the explosion. Wreckage has been blown to the tops of turrets 2 and 4.



and into a trap set by U.S. forces. While the old Japanese battleships were being destroyed by shellfire from equally old U.S. battleships at the North end of Surigao Strait, *Mogami* was hit by two 20.3 cm (8 inch) shells, one of which put turret number 2 out of action. She fired four 'Long Lance' torpedoes to the north and turned south at high speed. Minutes later she was hit in the bridge area by two or three 8-inch shells from USS *Portland*. These hits killed the captain and high-ranking officers. The gunnery officer took charge, and the crew steered the stricken cruiser by hand with only one rudder functioning. While retiring, *Mogami* collided with *Nachi*, the third collision during the war for the hard-luck ship. Fires started by the 8-inch hits were hard to extinguish, and the crew started jettisoning the remaining torpedoes. Five of the lethal 'Long Lance' warheads exploded, damaging the engine rooms and putting one shaft out of action. Then, cruisers USS *Louisville*, USS *Portland* and USS *Denver* caught up with the damaged *Mogami* and hit the stricken cruiser with twenty 8- and 6-inch shells. *Mogami* returned five 20.3 cm (8 inch) shells. In darkness, *Mogami* escaped the shelling and joined *Nachi* and tried to proceed to Colon. However, the remaining engine broke down and the stationary cruiser was attacked again by TBM-1 bombers. *Mogami* was hit forward of the bridge by two 500-pound (225 kg) bombs which started fires. The crew tried to flood the forward magazines, but the pumps were too badly damaged, and the gunnery officer ordered the remaining crew to abandon ship. Japanese destroyer *Akebono* took the crew off and fired a torpedo into *Mogami* which rolled over and sank. *Mogami* was deleted from the Navy List on December 20, 1944.

Suzuya, with Sentai 7 of Admiral Kurita's Center Force, sustained a near miss from a bomb dropped by TBM bombers on the port side aft which put one shaft out of commission and reduced speed to 20 knots. In a later attack by more bombers the cruiser received another near miss on the starboard side that ignited 'Long Lance' torpedoes in their tubes. Additional torpedoes exploded, causing heavy fires which later detonated the remaining torpedoes and HA ammunition. The order to abandon ship was given. *Suzuya* sank on 25 October 1944 and was removed from the Navy List on 20 December 1944.

Kumano, also with Sentai 7, was hit in the bow by a 21-inch (53 cm) Mk 15 torpedo fired from a range of 8,175 yards (7,500 meters) by the destroyer USS *Johnston*. Counterflooding reduced the cruiser's speed to 12 knots, and *Kumano* retired toward San Bernardino Strait. In the strait, the stricken cruiser was attacked again by bombers, and a near miss flooded a boiler room. The next day, 26 October, the cruiser was attacked by fighters and bombers from the carrier USS *Hancock* and sustained three 500-pound bomb hits which put all but one of the boilers out of commission. *Kumano* slowly made her way to Manila where she was patched up enough to make 15 knots. Along with *Aoba* and sub-chasers, *Kumano* was then ordered to escort a convoy of freighters to Japan. While en route the convoy was attacked off Cape Bolinao, Luzon, by submarines USS *Guitarro*, USS *Bream*, USS *Raton*, and USS *Ray*. The slow *Kumano* was hit by two torpedoes probably fired by USS *Ray*. The cruiser's bow section was blown off, and her engine rooms were flooded, necessitating her towing back to Manila where she again was patched up enough to make 15 knots. On 25 November 1944, *Kumano* was attacked by bombers from the carrier USS *Ticonderoga* and was hit by four bombs and at least five torpedoes. The heavy cruiser capsized and sank, *Taisa* Hitomi Soichiro being removed from the bridge by force. *Kumano* was taken off the Navy List on 20 January 1945.

Tone Class

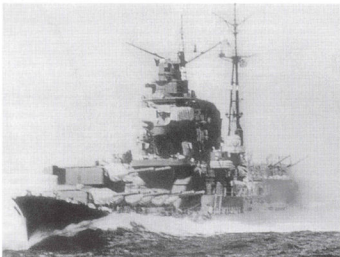
Tone and sister-ship *Chikuma* were designed as 'improved *Mogami*' light cruisers but were modified while still on the ways to provide forward reconnaissance for the Japanese cruiser force. The main armament of twelve 15.5 cm (6-inch) guns was mounted in four triple turrets on the very long foredeck, leaving the afterdeck free for seaplane operations. There were two cat-

(» 54)



Tone in Sukumo Bay taking part in training operations during June 1941. The very long foredeck complete with four twin Model E3 turrets can be seen.

Chikuma taking part in gunnery training in 1941. The four model E3 turrets on the foredeck are clearly visible with the main guns trained to the port side. The characteristic bow wave is higher than the main deck as the heavy cruiser slices forward at over 30 knots.





◀ Tone at anchor with other units of the IJN in 1939. Kawanishi E7K2 ('All') floatplanes are in place on the catapult and on the after deck of the heavy cruiser.

▼ Tone at sea during training in 1939. The turrets are trained to starboard. The pagoda bridge was placed very far back on the hull in these cruisers. In practice these warships were not considered to be particularly efficient, and *Ibuki* was being constructed as a modified *Suzuya* design.



apults on the forward part of the aircraft deck, and a system of rails allowed five seaplanes to be carried. As secretly planned, the cruisers were converted to 'A' class standard with the replacement of the main armament by eight 20.3 cm (8-inch) guns in double turrets on the foredeck.

In combat, the unique arrangement of armament of the *Tone* class proved to be of less than projected value, and a new class of "improved *Suzuki*" heavy cruisers was planned starting with construction of *Ibuki*. Work on this warship was suspended and then resumed as a light aircraft carrier which was never completed.

In wartime form, the *Tone* class was 201.6 meters (661.3 feet) long with a beam of 18.5 meters (60.7 feet). Mean draught was 6.48 meters (21.3 feet) and displacement was 14,070 tons at ½ trial weight. Full war load was 15,239 tons. Eight large Kampon boilers drove four sets of impulse-type geared turbines generating 152,000 shaft horsepower turning four shafts with three-bladed propellers which drove the ships at a top speed of 35 knots. Radius of action was planned to be 22,200 km (12,000 nautical miles) at 14 knots. Complement was 874 officers and men. These ships were reportedly the most comfortable of the Japanese cruisers, which were notorious for discomfort.

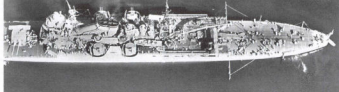
Tone-class side armor was a 100 mm (3.9-inch) thick belt, 77.8 meters (256 feet) long and 7 meters (23 feet) high over the machinery spaces. The armored deck was 31 mm (1.2 inches) thick in the middle, increasing to 65 mm (2.5 inches) in the sloped outboard part. The conning tower was armored with 70 mm to 130 mm (2.73 to 5 inch) plates on the sides.

In wartime form, the *Tone* class had a main armament of eight 20.3 cm (8 inch) guns in four twin-turrets which were all mounted on the forward deck. Turret number two was fitted with super-firing guns. Secondary armament consisted of eight 12.7 cm (5-inch) Type 89 HA guns in four Model 1 double mounts. Other guns were twenty-four 25mm (1 inch) Type 96 heavy machine guns in eight triple mounts, eight Type 96 machine guns in twin mounts and up to twenty-five Type 96 machine guns in single mounts. *Tone* in final form mounted sixty-two Type 96 heavy machine guns. Twenty-four Type 93 'Long Lance' torpedoes were carried, to be fired from four rotating Model 1 mounts. Provision was made for up to six seaplanes, although five were usually carried.

Both aircraft cruisers were built by Mitsubishi at Nagasaki and laid down and launched between 1 December 1934 and 19 March 1938. Lessons learned from the shortcomings of the *Mogami*-class cruisers resulted in much stronger hulls and better balance for this class. *Tone* was commissioned on 30 November 1938 and the *Chikuma* on 20 May 1939, just in time for World War II. Similar to the *Mogami* class, these were originally light cruisers and were named for home-land rivers as was the custom. Both cruisers of this class were constructed in secrecy, and to this day not many photos exist of *Tone* or *Chikuma*.

When commissioned, *Tone* and *Chikuma* were attached to the Yokosuka Naval Station and were assigned to Sentai 6 of the Second Fleet. They soon were transferred to Sentai 8 within the same fleet. On 1 December 1939 both ships were attached to the Maizuru Naval Station, the first large ships at that station. The cruisers participated in training, mainly in Chinese waters, until they were refitted during April 1940 to add a degaussing coil.

Both cruisers participated in the Pearl Harbor attack and launched seaplanes on 8 December to reconnoiter damage to the U.S. fleet. After the Pearl Harbor attack they supported the landings on Wake Island. Following an overhaul at Kure the cruisers supported operations in the Rabaul area, off Palau, and in the Banda Sea to launch an air attack against Darwin, Australia. Then, *Tone* and *Chikuma*, as part of the Mobile Striking Force of cruisers, battleships, and destroyers, took part in the sinking on 1 March 1942 of several Allied ships including the destroyer USS *Edsall* and the Dutch minesweeper *Modjokerto*. On the morning of 5 April 1942, a scout plane launched from the *Tone* in the Indian Ocean discovered the British heavy cruisers HMS *Cornwall* and HMS *Devonshire*, both of which were sunk by aircraft from Carrier Division One of the Mobile Force. After this classic operation, *Tone* and *Chikuma* proceeded to home port at Maizuru.



▲ This 1940 aerial view of *Chikuma* clearly shows the seaplane handling deck with rails, mainmast, and derrick along with the two catapults. The high-angle gun emplacements on the sides are obvious.



▲ *Chikuma* observed from an aircraft in 1940. Catapults, gun emplacements, and rangefinders are clearly seen, along with a Kawanishi E7K2 ('Alf') floatplane on the port catapult.

▼ The unique profile of *Chikuma* is contrasted against distant hills in this 1940 photograph.





▲ *Chikuma* in 1939 was wider in both bow and stern than other classes of Japanese heavy cruisers. The twin white bands around the funnel were removed prior to World War II.

The two Sentai 8 cruisers' next assignment was to support operations to seize Midway. On 5 June Sentai 8 provided scout planes to locate the U.S. fleet, and it was *Tone's* number four seaplane that discovered the U.S. carriers in this critical battle. During the battle, both *Tone* and *Chikuma* were attacked by dive bombers and land-based aircraft but received no damage. The IJN lost four fleet carriers, — *Akagi*, *Kaga*, *Soryu*, and *Hiryu* — to dive bombers from carriers USS *Enterprise*, USS *Yorktown*, and USS *Hornet*. *Yorktown* was lost, as was the Japanese heavy cruiser *Mikuma*.

Following the Midway debacle, *Tone* and *Chikuma* spent a fruitless cruise in support of the Aleutian Operation and returned to participate in Third Fleet maneuvers in the Inland Sea. Both cruisers took part in the Solomons Campaign between August 1942 and January 1943. During the Second Solomons Sea Battle on 24 August 1942 light carrier *Ryūjō* was sunk by U.S. carrier aircraft, and *Tone*, along with destroyers, rescued part of the carrier's crew. A floatplane from *Chikuma*, serving with Rear Admiral Kondo's Second Fleet, located the U.S. fleet, which slipped away at night as elements of the Japanese fleet tried to close in. During the Battle of the Santa Cruz Islands on 26 October 1942, *Chikuma* was hit by a bomb delivered by Air Group 8 from USS *Hornet* which caused moderate damage to the control tower. *Taisa* Komura, although wounded, wisely ordered the torpedoes jettisoned. This brave action saved the ship, because three minutes after the last torpedo had been launched, the ship was hit in the torpedo room by a 500-pound (225 kg) bomb. The cruiser had to return to Truk and then to Japan for repair at Kure. *Tone* remained at Truk and cruised with the new carrier *Junyō* off Java.

Following major refitting, the two cruisers of Sentai 8 operated out of Truk and were involved in many supply and support missions to Rabaul and Eniwetok. The cruisers were at Rabaul on 5 November 1943 when U.S. aircraft attacked the harbor, inflicting minor damage to *Mogami* and *Chikuma*. Sentai 8 was disbanded on 1 January 1944, and *Tone* and *Chikuma* were assigned to Sentai 7 with units of the *Mogami* Class.

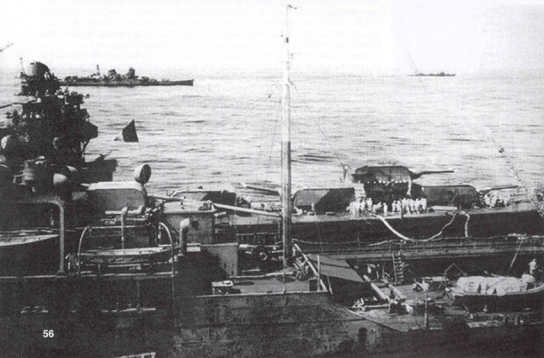
Sentai 7 spent much time during 1944 waiting at Lingga Roads near Singapore for an opportunity to engage the ever more powerful U.S. Fleet. At this point, the IJN hoped for a showdown in the Philippines, with the remaining battleships and heavy cruisers playing a major role. On 9 March 1944 *Tone* and *Chikuma* were operating with *Aoba* in the Indian Ocean when *Tone* sank the British ship SS *Behar* south of Cocos Island. Most of the survivors of the *Behar* were executed on board the *Tone*. Cruisers of Sentai 7 participated without damage in the Battle of the Philippine Sea on 19–20 June 1944 (called the "Marianas Turkey Shoot" by American pilots), during which most of the remaining Japanese aircraft were lost. Then Sentai 7 left Lingga Roads as part of Center Force to participate in operation *Shō-I-Go* which developed into the Battle of Leyte Gulf. *Shosha* (Rear Admiral) Shimaishi, in command of Sentai 7, flew his flag from *Chikuma*. The cruisers made passage through the critical San Bernardino Strait without damage. *Chikuma* fired at light carrier USS *Gambier Bay* during the battle off Samar, but was struck soon after by a torpedo from a TBM bomber operating from light carrier USS *Natoma Bay*. The hit ruptured the anti-torpedo bulkhead, and the engine room quickly flooded, causing loss of power. The cruiser was still immobile when the premature withdrawal order was given, and the Japanese destroyer *Nowaki* took the crew off and put torpedoes into the *Chikuma*, causing the cruiser to sink on 25 October 1944. *Nowaki* was sunk by U.S. aircraft shortly after and sank with all hands, including those of the *Chikuma*. Because of the loss of her crew, *Chikuma* was not removed from the Navy List until 20 April 1945.

Tone was attacked by U.S. TBM torpedo bombers and SB2C dive bombers in the Sibuyan Sea on 24 October 1944 before entering the San Bernardino Strait. The cruiser was hit by three bombs — one a 'dud' — which did little damage. Following the attack, *Tone* escorted the super battleship *Musashi* which was sunk by U.S. bombers. After loss of the battleship, *Tone* joined Admiral Kurita's Center Force, but an attacking U.S. destroyer hit the cruiser with a 5-inch (12.7 cm) shell causing minimal damage. During withdrawal, the cruiser was hit again in the steering gear by a 550-pound (250 kg) bomb dropped by a TBM. The stricken cruiser made it to Brunei and then to home port, Maizuru, where she was dry-docked and modified. The anti-aircraft armament was increased to sixty-two 25 mm (1-inch) Type 96 heavy machine guns. At the same time the 'bedspring' style Number 21 air search radar was replaced with Number 22 surface-search and fire control radar.

The last assignment of *Tone* was as a training ship attached to Itajima, the Japanese equivalent of Annapolis. On 24 July 1945, *Tone*, now rated as a special guard-ship, was hit by multiple bombs which flooded the engine rooms. The warship was towed by a tug to shallow water where she finally sank. *Tone* was removed from the Navy List on 20 November 1945 and the wreck was salvaged between 4 May and 30 September 1948. *Tone* was among the last of the eighteen 'A' Class heavy cruisers with which the IJN went to war in December 1941.

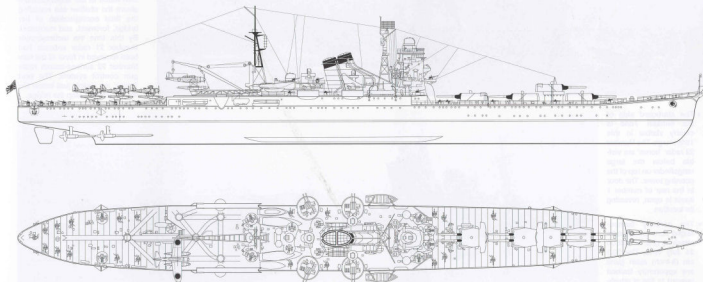
Tone, 1945





▲ Seen from battleship *Hiei* on 27 May 1942, *Tone* raises anchor prior to getting underway as she sorties for the Battle of Midway. *Tone* was the flagship of Sentai (Squadron) 8 of Vice Admiral Nagumo Chuichi's Mobile Force at the time, and the flag officer's pennant flies from the main foretop. Three Aichi E13A1 Type 0 ('Jake') reconnaissance seaplanes and one Nakajima E8N2 Type 95 ('Dave') spotter seaplane were stowed aft. One of these floatplanes discovered the U.S. carriers to the northeast of the Japanese Mobile Force during the Midway battle.

▲ *Tone* being refueled from oil tanker *Kokuyu Maru* during the A-GO operation on 17 June 1944. Heavy cruiser *Suzuya* is in the background along with a distant destroyer. Anti-aircraft gun emplacements, turrets and the pagoda bridge are visible. Crew members are handling fuel lines by the number 2 turret on the foredeck. The IJN used side-by-side underway refueling methods similar to those used by the U.S. Navy.



Specifications

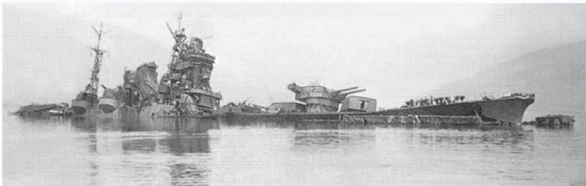
Length: 201.6 meters (661.4 ft)
 Beam: 18.5 meters (60.7 ft)
 Draft: 6.48 meters (21.3 ft)
 Displacement: ... 14,070 tons at 1/2 trial weight
 15,239 tons full war load
 Propulsion: 152,000 shp/four screws
 Speed: 35 knots
 Complement: 874 officers and men
 Aircraft: 2 x E13A1 reconnaissance floatplanes
 3-4 x F1M2 spotter floatplanes

Armament: 8 x 20.3 cm (8-in) guns in four turrets
 8 x 12.7 cm (5-in) high-angle guns
 in four twin mounts
 24 x 25 mm (1-in) heavy machine guns
 in eight triple mounts
 8 x 25 mm (1-in) heavy machine guns
 in four twin mounts
 25 x 25 mm (1-in) heavy machine guns
 in single mounts
 4 x 61 cm (24-in) quadruple torpedo launchers
 24 Type 93 'Long Lance' torpedoes

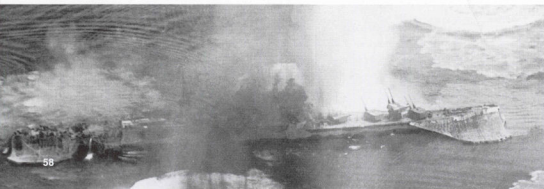


► The starboard side of the sunken *Tone* is clearly visible in this 1945 image. The Number 22 radar 'horns' are visible below the large rangefinder on top of the conning tower. The door in the rear of number 1 turret is open, revealing its location.

▼ The partially camouflaged *Tone* under aerial attack by U.S. aircraft on 24 July 1945. The 20.3 cm (8-inch) main guns are apparently trained upward to fire at attacking bombers.

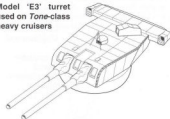


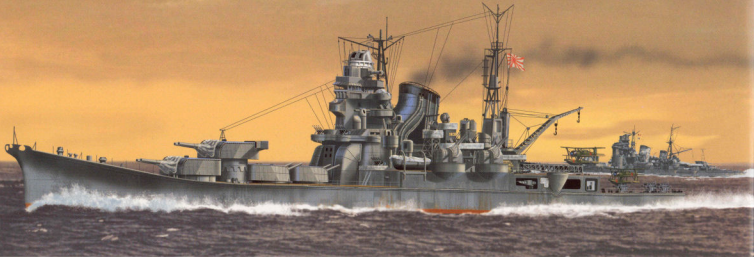
◄ In the end, the once-mighty *Tone* was serving as a guard ship off the IJN naval academy at Itajima when she was bombed and sunk by U.S. aircraft on 24 July 1945. The wreck settled to the bottom with much of her superstructure above the shallow sea revealing the final configuration of her bridge, foremast, and mainmast. By this time the mattress-style Number 21 radar antenna had been removed in favor of the new Number 22 surface-search radar gun control system. The port 'horns' are visible just below the 6M rangefinder atop the bridge.



Armament

Model 'E3' turret used on *Tone*-class heavy cruisers





(Above) *Chikuma*, along with *Haguro*, makes a gallant run ahead of the fleet on the morning of 25 October 1944 to attack the light carrier USS *Gambier Bay* during the Sea Battle off Samar.

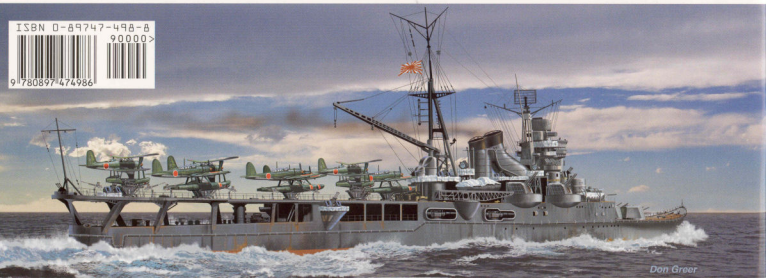
(Below) Seaplane cruiser *Mogami* on her fateful mission to engage U.S. cruisers in Surigao Strait on 25 October 1944. Hit by gunfire from three US cruisers, *Mogami* escaped only to be later sunk by US carrier-based aircraft.

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Don Greer